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Original Communications.

THE ACTION AND ANTAGONISM OF SOME DRUGS ON THE FROG'S VENTRICLE.

By Thos. J. Mays, M. D.

THE following experiments were undertaken with a view to pursue still further that interesting work of determining the action of our pharmacological agents upon the frog's heart which has been so ably begun by German and English physiologists, and which we believe will establish important clues concerning the action of our therapeutic agents on the human organism.

In regard to the apparatus which I employed it is only necessary to state that the heart, by means of a double cannula, on which it is securely tied, is attached to a Kronecker-Bowditch heart apparatus which, through a mercury manometer and an appropriate needle, records its pulsations upon a revolving cylinder of a Ludwig kymographion. Through the double cannula the heart is fed from two Mariotte's bottles with any desirable fluid, and always under the same pressure. It is well known that a heart thus arranged will, if properly fed with a blood-solution, continue to beat for many hours. In all these

experiments a two-per-cent. solution of dried bullock's blood was employed—the solvent being a one-sixth-per-cent. common salt solution. All the agents which were investigated were added to the two-per-cent. blood-solution; hence everything remained constant except the varied doses of the agents tested. The agent was ready prepared in many varying proportions, and one cubic centimeter of each proportion was used in transfusing and filling the heart. For example, the proportion 1:100 indicates one part of the agent to 100 parts of the two-per-cent. blood-solution. In order to keep the heart pulsating regularly, minimum shocks of one Daniell's cell, through a Du Bois induction coil, were used.

In estimating the comparative effects of the different pharmacological agents, it is necessary to understand that the highest traces or pulsations, which are obtainable from a heart fed with a two-per-cent. blood-solution alone, are taken as a standard, and by which all the other traces are judged. This plan is pursued throughout the present investigation. For example, at the outset of every separate investigation, the highest possible traces which each heart could produce with blood-solution were found, then if the addition of a certain quantity of an agent to the blood-solution gives higher traces, it is positive evidence that such a quantity of the agent enhances the heart's action; so, on the contrary, if the addition of another quantity to the blood-solution produces traces lower than those which the blood-solution alone gives, it is, likewise, positive evidence that such a quantity of the agent interferes with the action of the heart.

All the agents with which these experiments were made arrest the heart in one of two ways—either in systole or in diastole, and their power to do one or the other is the dividing line between their respective characteristic actions. Those agents which cause systolic arrest enhance the impressibility of the heart, thereby necessitating an increased distance between the primary and secondary coils of the induction machine in order to obtain minimum shocks; while, on the other hand, those which bring about a diastolic pause, do not heighten the impressibility of the organ, but invariably depress it during the course of an experiment. Very often when the contractility of the heart is impaired or even inhibited by one of these agents, a still stronger electric current will serve to call forth renewed contractions, showing that contractility is only suppressed and not extinct, and that a stronger impulse is only required to bring out the residual contractile power. But when the heart's action is once stopped by an agent causing systolic standstill it is but seldom that the strongest shocks will ever after bring about the least contraction. This great difference in the products of these agents cannot be due to a similarity of action, for one is diametrically opposed to the other. If the heart is arrested in diastole, as in the case of potash, for example, it will afterwards be brought into a powerful state of contraction by ammonia.

From the above facts it appears that these agents have the power of affecting the nervous* and muscular irritability of the heart, or conductivity and contractility; or in still other words they have the power of selecting these two fundamental properties which are common to all irritable matter, although one of these functions has no marked structural differentiation in the ventricle of the frog. And furthermore it appears those which *have* an affinity for nervous irritability arrest the heart in systole, and those which affect muscular irritability arrest the heart in diastole.

Therefore, in view of all these various points, each agent was, as far as possible, tested for the purpose of ascertaining (1) its power to produce the highest possible pulse-trace; or, what is equivalent, its greatest power to perform mechanical work; and the quantity which effected this was found to be its *minimum dose;* (2) the quantity which paralyzes or destroys its power of contraction, and this is called its *maximum dose;* (3) whether it influences nervous, or (4) muscular irritability; and (5) whether it arrests the heart in systole or diastole.

ABSOLUTE ETHYL ALCOHOL.

After many repetitions it was demonstrated that the minimum dose of alcohol is from 1:2000 to 1:4000; its maximum dose 1:25, that its affinity is chiefly for muscular irritability, and that it arrests the heart in diastole.

---

* Nervous irritability is used as synonymous with conductivity.

2 p. c. Blood sol. Alcohol 1:2000.

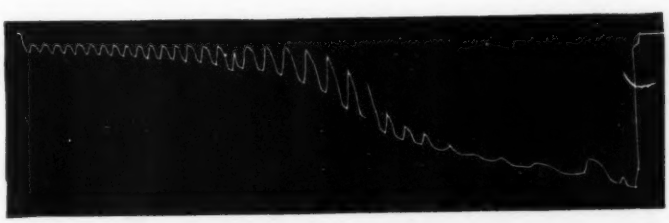
1:666. 1:1000.

1:400. 1:1000.

1:25. 1:1000.

These tracings clearly illustrate that if the quantity of alcohol is properly adapted, it will have the power of enhancing the action of the heart beyond the point to which it is brought by the influence of blood-solution alone (compare traces 1 and 2); as well as that its depressant effects are proportionate to the amount of the agent employed. (See traces 3 and 4.)

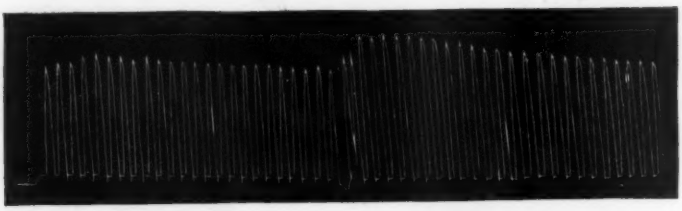
The tracings throughout the investigation of alcohol were normal, *i. e.*, the heart responded regularly to each induction shock with a complete contraction, which is shown by the trace being as near the base line at the dilatation as at the beginning of the contraction; except in instances when it was completely overwhelmed by large quantities of alcohol. This is seen in trace II, where it was applied in the proportion of 1:5, but even here the heart beat was restored towards the end.



TRACE II. Obtained from alcohol 1:5.

ÆTHER SULPHURICUS.

Sulphuric ether, like all the members of this group with which I experimented, is analogous in its action to alcohol. Its minimum dose is from 1:1000 to 1:2000; its maximum dose is from 1:3 to 1:10, its affinity is for muscular irritability, and it arrests the heart in diastole.



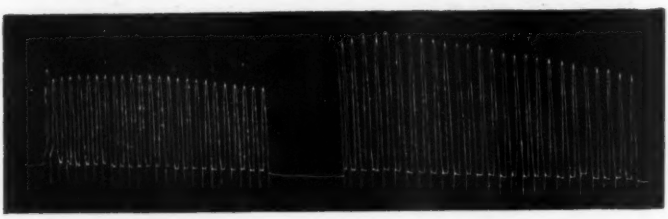
Blood sol. 1:2000.

1:1000. 1:3.

TRACE III.—Showing the effects of sulphuric ether.

CHLOROFORMUM.

Its minimum dose is 1:40,000; its maximum dose is 1:400 and 1:500; it has a strong affinity for muscular irritability, and it arrests the heart in diastole.



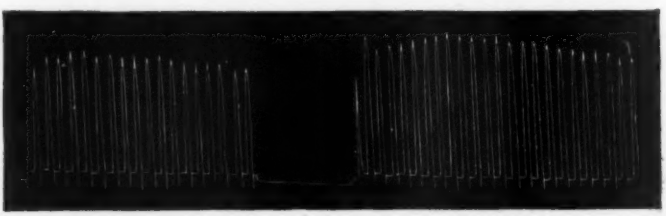
Blood sol. 1:40000.

1:1000. 1:500. 1:20,000.

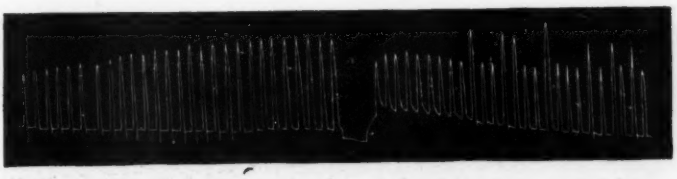
TRACE IV.—Showing the effects of chloroform.

AQUA AMMONIÆ.

Its minimum dose is 1:80,000; its maximum dose is from 1:250 to 1:500; it has a decided affinity for nervous irritability; and it arrests the heart in systole.



Blood sol. 1:80,000.



1:10,000. 1:2000.

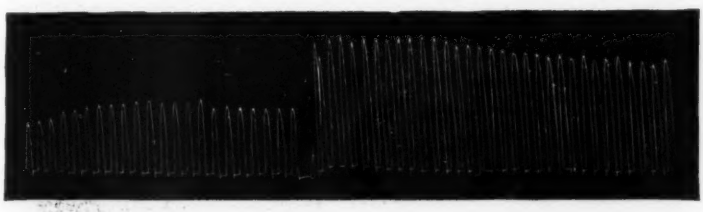
1:500. 1:250.

TRACE V.—Showing the effects of ammonia.

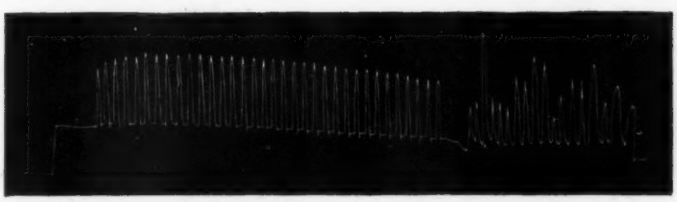
It will be seen that the traces obtained from ammonia differ in many respects from those which precede them. They show that the irritability of the heart became very much increased under the influence of large doses. Already under the influence of 1:2000 the heart's contractions became stronger, and the dilatations smaller, as is shown by the diminished pulse traces and by the greater elevation of the tracing above the base line. Another characteristic of all agents which sharply disturb the irritability of the heart is that they make the heart so sensitive that it will frequently respond to both the opening and closing shock of the electric current, and thus produce a very transient tetanic contraction of the heart. This is shown in the tracings where the pulse elevations at irregular intervals rise above the height of the other. Again the minimum stimulus rising from 9 cm., at the beginning of the experiment, to 10.5 cm. at its close, is additional evidence that the nervous irritability or conductivity is chiefly affected by ammonia.

SODIUM HYDRATE.

The minimum dose of hydrate of soda is 1:160,000, its maximum dose is from 1:500 to 1:1000, it has a decided affinity for nervous irritability, and it arrests the heart in systole.



Blood sol. 1:160,000.



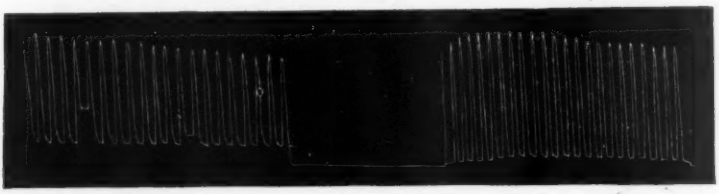
1:5000. 1:4000

1:1000.

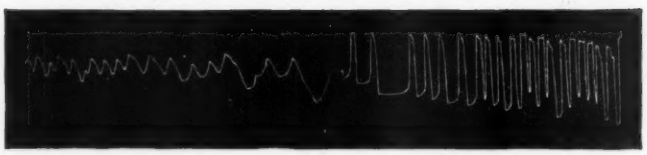
TRACE VI. Showing the effects of hydrate of soda.

SODII BI-CARBONAS.

Its minimum dose is from 1:1000 to 1:2000, its maximum dose is 1:13, it has an affinity for nervous irritability, and it arrests the heart in systole.



Blood sol. 1:1000.

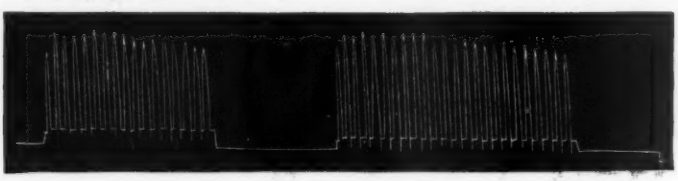


1:25. 1:13.

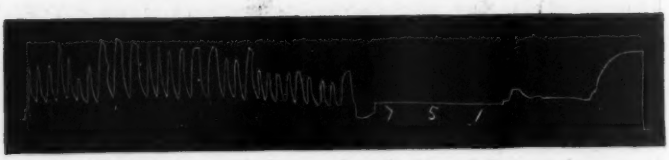
TRACE VII. Showing the effects of bicarbonate of soda.

SODII SALICYLAS.

Its minimum dose is 1:64000, its maximum dose is 1:500, its affinity is for nervous irritability, and it arrests the heart in systole.



Blood sol. 1:64000.

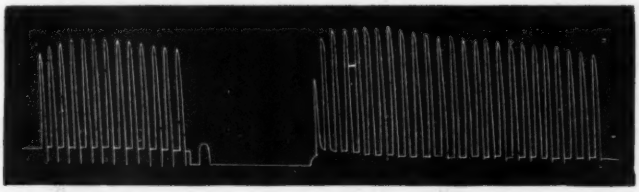


1:8000. 1:500.

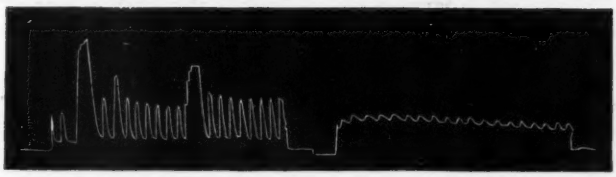
TRACE VIII. Showing the effects of salicylate of soda

SODII BENZOAS.

Its minimum dose is 1:32000; its maximum dose about 1:200; it has an affinity for nervous irritability, although less than the other soda salts, and it arrests the heart in systole



Blood sol. 1:32000.



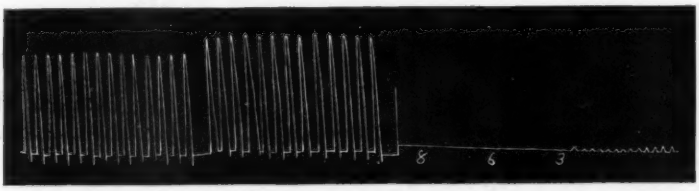
1:308. 1:200.

TRACE IX. Showing the effects of benzoate of soda.

That which is true in regard to ammonia in causing a hyper-sensitiveness of the heart, or in increasing its irritability, is equally true of all the salts of soda which come within the scope of this investigation. This is clearly shown in the above tracings of bicarbonate, salicylate, and benzoate of soda, in the proportion of 1:25, 1:8000, and 1:308 respectively, where the double responses to the induction current are quite numerous. This affinity for conductivity marks the dividing line between the action of ammonia and soda and that of potash.

POTASSIUM HYDRATE.

Its minimum dose is from 1:40,000 to 1:80,000, its maximum dose is 1:1000, its affinity is chiefly for muscular irritability, and it arrests the heart in diastole.

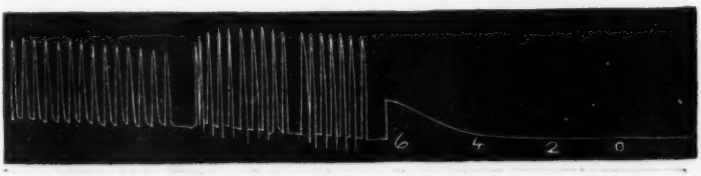


Blood sol. 1:40,000. 1:1000.

TRACE X. Showing the effects of hydrate of potash.

POTASSII BI-CARBONAS.

Its minimum dose is 1:2000, its maximum dose is 1:400, it has an affinity for contractility, and arrests the heart in diastole

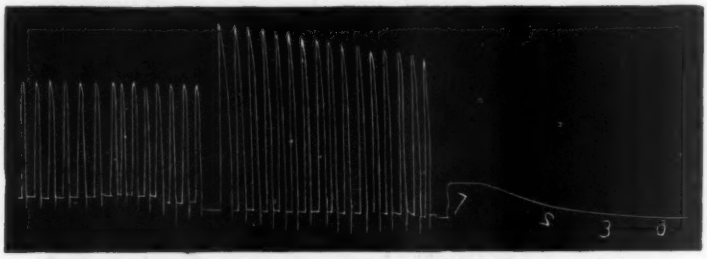


Blood sol. 1:2000. 1:400.

TRACE XI. Showing the effects of bicarbonate of potash.

POTASSII CHLORAS.

Its minimum dose is 1:4000, its maximum dose is 1:200, its affinity is for muscular irritability or contractility, and it arrests the heart in diastole.

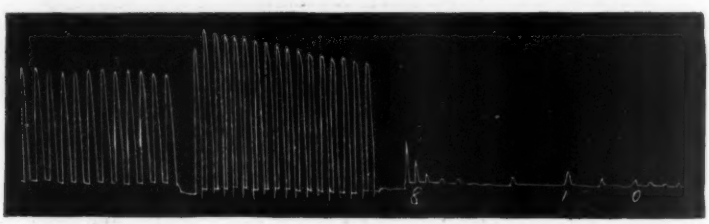


Blood sol. 1:4000. 1:200.

TRACE XII. Showing the effects of chlorate of potash.

POTASSII ACETAS.

Its minimum dose is 1:4000, its maximum 1:200, it has an affinity for contractility, and arrests the heart in diastole.

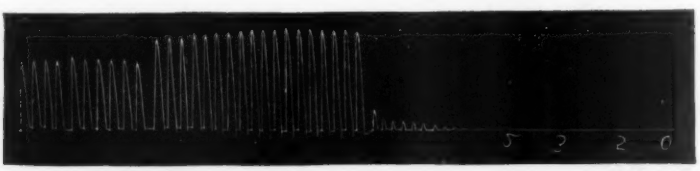


Blood Sol. 1:400 1:200

TRACE XIII.—Showing the effects of acetate of potash.

POTASSII BROMIDUM.

Its minimum dose is 1:4000, its maximum 1:200, affinity for contractility, and it arrests the heart in diastole.

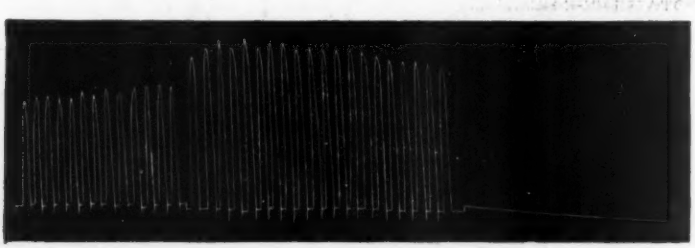


Blood sol. 1:4000 1:200

TRACE XIV.—Showing the effects of bromide of potash.

POTASSII IODIDUM.

Its minimum dose is 1:2500, its maximum 1:100, its affinity is for contractility, and it arrests the heart in diastole.

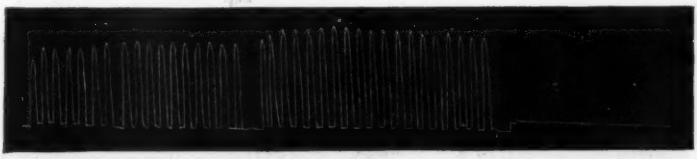


Blood sol. 1:2500 1:100

TRACE XV.—Showing the effects of iodide of potash.

POTASSII PHOSPHAS.

Its minimum dose is 1:4000, its maximum 1:200, its affinity is for contractility and it arrests the heart in diastole.

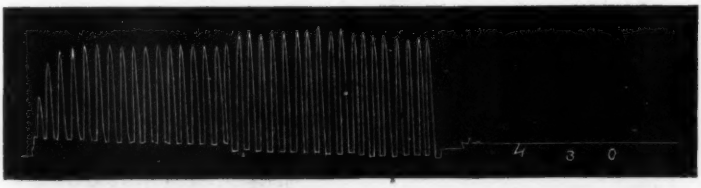


Blood sol. 1:4000 1:200

TRACE XVI.—Showing the effects of phosphate of potash.

POTASSII PERMANGANAS.

Its minimum dose is 1:32000, its maximum 1:308, it has an affinity for contractility, and it arrests the heart in diastole.



Blood sol. 1:32000 1:308

TRACE XVII.—Showing the effects of permanganate of potash.

Potassium and its salts belong to that class of agents which destroy cardiac action, not by operating on conductivity so much as by interfering with muscular irritability or contractility. The nervous irritability of the heart, under the influence of large doses, remains about the same, or is mostly depressed; but it is never elevated or enhanced as it is through the action of considerable doses of ammonia and soda. The tendency to respond to both the opening and closing of the minimum current, which, as has been already stated, is indicative of enhanced conductivity, and which is always present when ammonia and soda are employed, is continually absent not only in the experiments with the hydrate of potash but with all its salts, as is apparent from the above-copied tracings. After they have arrested the heart in diastole, maximum doses of ammonia will bring about strong systolic contraction, and shrink the heart up into a hard lump.

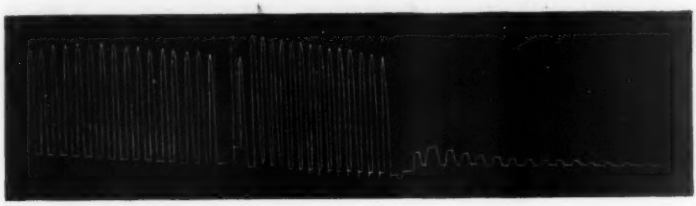
In the *Journal of Physiology*, Vol. III. page 195, Prof. Ringer records the results of a very interesting series of investigations obtained from the action of the hydrates of ammonia, soda, and potash on the frog's ventricle, and as far as maximum doses of ammonia and soda are concerned, my results, in the main, agree with those found by him. Tracings of the same character as those which he describes, and of which he gives a *fac simile* on plate xii, I also obtained from these agents in large doses, but I do not think it necessary to reproduce them here, because they are hardly pertinent to the aims and objects of my researches. It must be remembered, however, that the tracings there given only represent the products of such quantities of these agents which destroy all regularity of action in the heart; and hence they can by no means be called characteristics of the action of these agents. The prolonged systole, the curved top, and the slow dilatation of the heart-beat only occur when the heart is profoundly impressed; but this is no more true of the action of ammonia or of soda, than it is of any other agent which strongly affects the nervous irritability of this organ. Tracings of such a form and character can very readily be obtained from maximum doses of digitalin, morphia, caffein, etc., and they are indications only that the heart is strongly influenced by toxic doses.

With potash I never succeeded in getting traces even approaching the character of those which he reproduces in plate xii, appended to his article. For this disparity I am unable to account, unless it is due to the

fact that my experiments, in almost every instance, were begun with minimum, and not with maximum doses, as was the case in his experiments.

ACIDUM ACETICUM DILUTUM.

Its minimum dose is 1:160,000, maximum dose 1:666, it has an affinity for contractility, and arrests the heart in diastole.

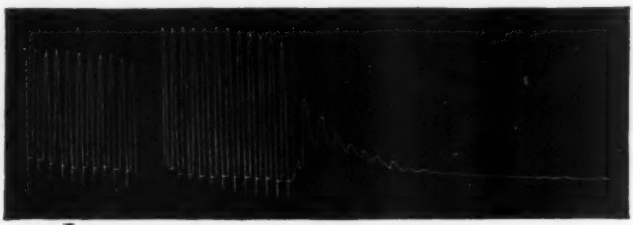


Blood sol. 1:160,000 1:666

TRACE XVIII.—Showing the effects of dilute acetic acid.

ACIDUM LACTICUM.

Its minimum dose is 1:160,000, its maximum dose 1:1000, it has an affinity for contractility or muscular irritability, and arrests the heart in diastole.



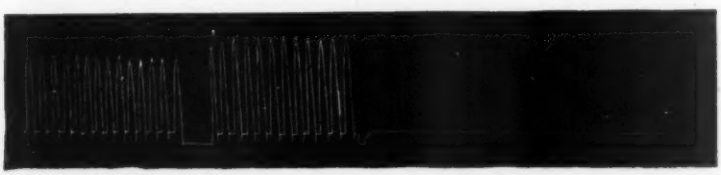
Blood sol. 1:160,000 1:1000

TRACE XIX.—Showing the effects of lactic acid.

The antagonism between acids and alkalies has already been studied by Brunton, Gaskell, and others, and the results recorded in my paper agree substantially with those obtained by the above-named observers in so far as the action of acetic and lactic acids in their relation to that of ammonia and soda are concerned. All experiments show a certain antagonism between these bodies, *i.e.* the heart, when arrested or fatigued with either acid, will afterwards more quickly recover its former pulse-elevations under either alkali in small doses, than it will under the influence of a blood-solution alone, and *vice versa*. Yet it is very doubtful whether the antagonism is as true and as genuine as that which obtains between atropia and chloroform, for example, which will be found below. It is extremely difficult to say whether one agent counteracts the influence of the other chemically or physiologically, when, as in this case, their very nature forbids their simultaneous application to the organ with which the experiment is made. It is probable, however, that their action is at least antagonistic in this much: that while one tends to arrest the heart in systole and the other in diastole, they in this way neutralize each other's influence.

ACIDUM CARBOLICUM.

Its minimum dose is 1:160,000, its maximum dose 1:250 to 1:500, it has an affinity for muscular irritability and arrests the heart in diastole.

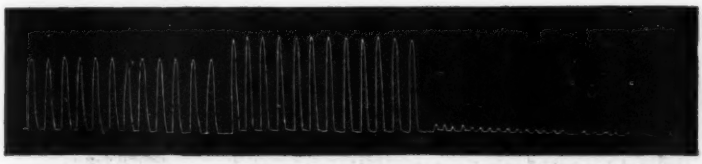


Blood sol. 1:16,0000 1:250

TRACE XX.—Showing the effects of carbolic acid.

ATROPINÆ SULPHAS.

Its minimum dose is 1:160,000, maximum dose, 1:1000, it has a strong affinity for muscular irritability, and arrests the heart in diastole.

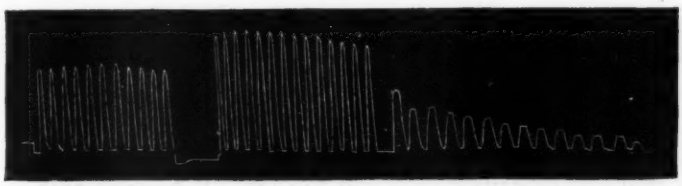


Blood sol. 1:160,000 1:1000

TRACE XXI.—Showing the effects of sulphate of atropine.

LYCOPIN.

Its minimum dose is 1:160,000, its maximum dose, 1:250, it has an affinity for muscular irritability, and it arrests the heart in diastole.

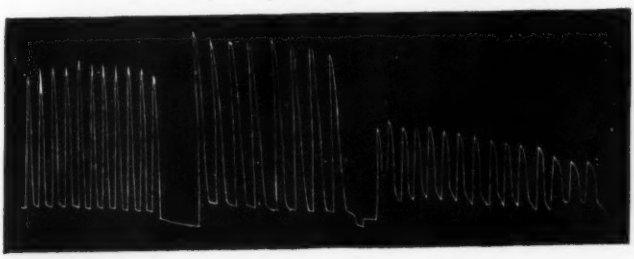


Blood sol. 1:160,000 1:250

TRACE XXII.—Showing the effects of lycopin.

CURARE.

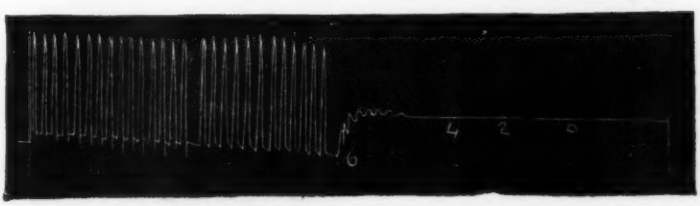
Its minimum dose is 1:80,000 to 1:160,000, its maximum dose is 1:50, its affinity is for muscular irritability, and it arrests the heart in diastole.



Blood sol. 1:60,000 1:250

TRACE XXIII.—Showing the effects of curare.

DIGITALIN.

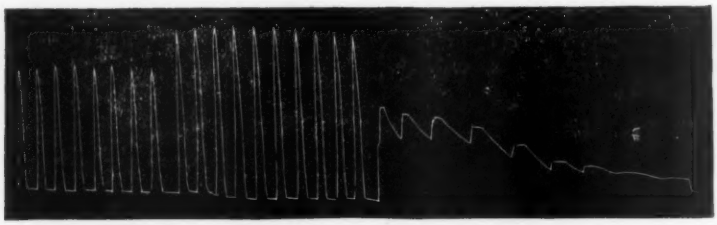


Blood sol. 1:80,000 1:1000

TRACE XXIV.—Showing the effects of digitalin.

ACONITINA.

Its minimum dose is 1:160,000 to 1:320,000, its maximum dose is 1:1000, it has an affinity for muscular irritability, and it arrests the heart in diastole.

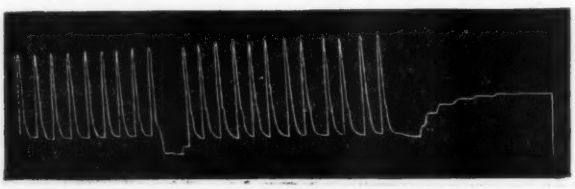


Blood sol. 1:320,000 1:1000

TRACE XXV.—Showing the effects of aconitine.

CAFFEINE.

Its minimum dose is 1:2000, its maximum dose, 1:67, its affinity is strongly for nervous irritability, and it arrests the heart in systole.

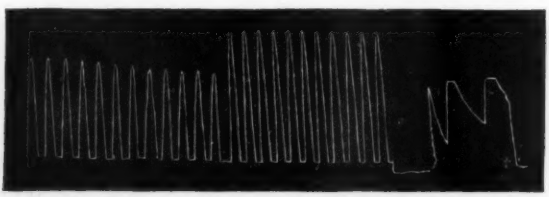


Blood sol. 1:2000. 1:67.

TRACE XXVI.—Showing the effects of caffeine.

MORPHINÆ SULPHAS.

Its minimum dose is from 1:80,000 to 1:160,000, its maximum dose is 1:1000, it has an affinity for nervous irritability, and arrests the heart in systole.

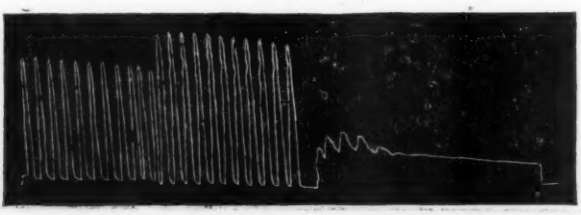


Blood sol. 1:80,000. 1:1000.

TRACE XXVII.—Showing the effects of sulphate of morphine.

DELPHININ.

Its minimum dose is 1:320,000, its maximum dose is 1:1000, its affinity is strongly for nervous irritability, and it arrests the heart in systole.

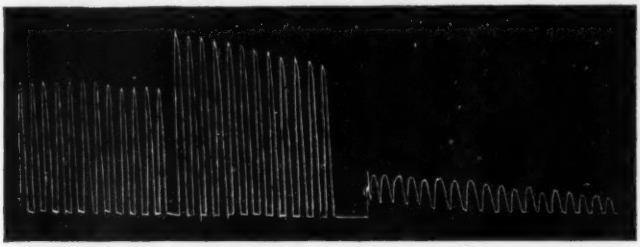


Blood sol. 1:320,000. 1:1000.

TRACE XXVIII.—Showing the effect of delphinin.

GELSEMININE.

Its minimum dose is from 1:80,000 to 1:160,000, its maximum dose is 1:50, it has an affinity for muscular irritability, and it arrests the heart in diastole.



Blood sol. 1:80,000. 1:50.

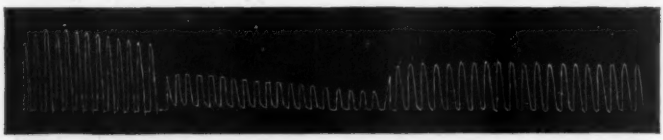
TRACE XXIX.—Showing the effects of gelseminine.

A number of other alkaloids and active principles have been investigated in accordance with the above plan and method, and the results were found to harmonize with the general law so well substantiated by the foregoing experiments, viz: That in appropriate quantities they all give traces better than blood-solution alone, and that in maximum doses they invariably arrest the heart either in systole or diastole. In justice to Prof. Bowditch, of Boston, it must be stated that as far back as 1871 (see *Verhandlungen der Gesellschaft der Wissenschaften zu Leipzig*, 1871, p. 681), he demonstrated that the proper dose of atropia gives higher pulse-elevations than blood-solution alone. As far as my knowledge extends, this has been the only effort made in exploring this interesting field of pharmacology.

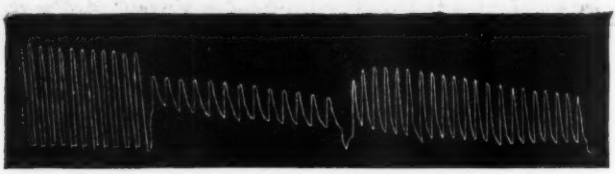
During these researches the very interesting phenomenon developed itself, viz.: When the minimum and maximum doses of some agents are once known, the minimum dose of one will, under some not yet fully explained conditions, become an antagonist to the maximum dose of the other, when they are administered simultaneously to the frog's heart. As far as can be seen, this action is very constant, decided and definite. Not every agent is antagonistic to another, but it appears that those agents which have the same elective affinity are the very best antagonists. This is at least true of those which chiefly affect muscular irritability.

In all the illustrations given below to demonstrate this antagonistic action, tracings of the effects of minimum doses of the antagonistic agent come first, then come the tracings of the effects of maximum doses of the agent to be antagonized, and then follow the tracings of the effects between minimum and maximum doses. This is not precisely the order of production, for in this respect the experiments varied occasionally, inasmuch as maximum doses were tested first, then the combination of minimum and maximum doses, and *vice versa;* but in every instance, in order to eliminate all chance for error, one immediately succeeded or preceded the other. For example, in the first tracing given below, sulphate of atropia 1:160,000 was first tested, then came the tracings produced by alcohol 1:25, and this is immediately followed by the tracings derived from the combined action of the two preceding proportions. It will be seen here that the maximum dose of alcohol, which was previously found to be 1:25, produced traces which, while they are regular in their recurrence, are very low and evidently the result of some interference with the normal excursion of the heart-beats, and directly afterwards come the tracings produced by the same amount of alcohol plus 1:160,000 of the sulphate of atropia. This demonstrates very palpably and clearly that there was a conflict between these two agents in those proportions. The stimulating and supporting influence which was communicated to the heart by the atropia, could not be successfully counteracted by the depressing dose of alcohol, for the pulse elevations are both higher and stronger than those of alcohol alone, although not quite as high as those which the minimum dose of atropia gave. In order to equalize the results as much as possible, the heart was allowed to make from twenty-five to thirty pulsations

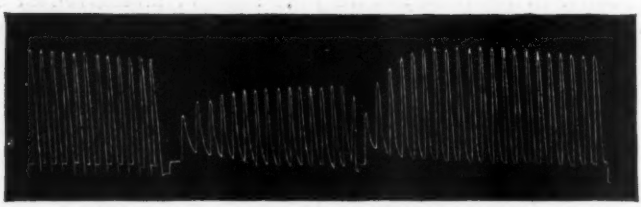
under the influence of each agent, or of each combination of agents, but specimen tracings of each product will only be shown here.



Atropine. 1:160,000. | Alcohol 1:25. | Their combined effects.



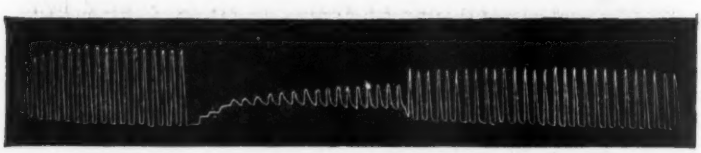
Aconitine. 1:60,000. | Ether Sulph. 1:5. | Their combined effects.



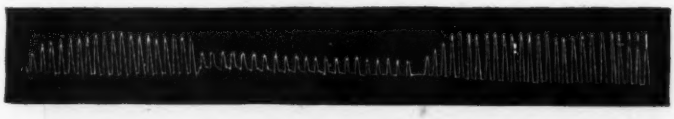
Curare. 1:8000. | Ether Sulph. 1:10. | Their combined effects.

Atropine. 1:160,000. | Ether Sulph. 1:10. | Their combined effects.

Atropine. 1:160,000 | Chloroform. 1:500 | Their combined effects.

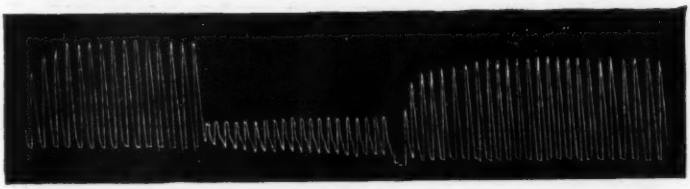


Curare. 1:80,000. | Chloroform. 1:500. | Their combined effects.



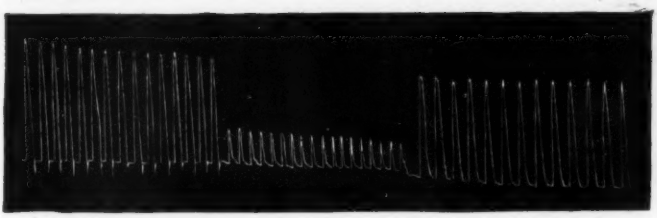
Ether sulph. 1:400. Chloroform. 1:500. Their combined effects.

Aconitine. 1:160,000. Ether Sulph. 1:5. Their combined effects.



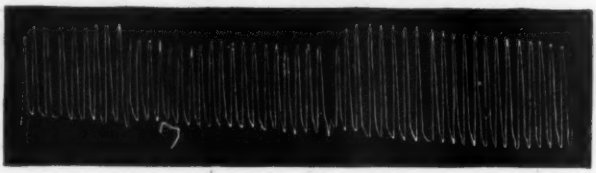
Aconitine. 1:160,000. —— Chloroform. 1:500. Their combined effects.

Lycopin. 1:160,000. Chloroform. 1:400. Their combined effects.

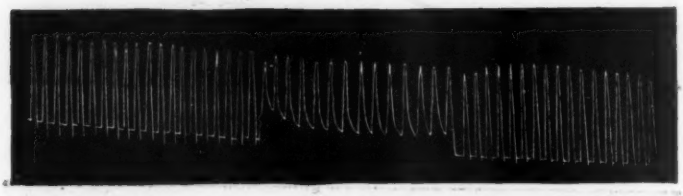


Aconitine. 1:160,000. Curare. 1:26. Their combined effects.

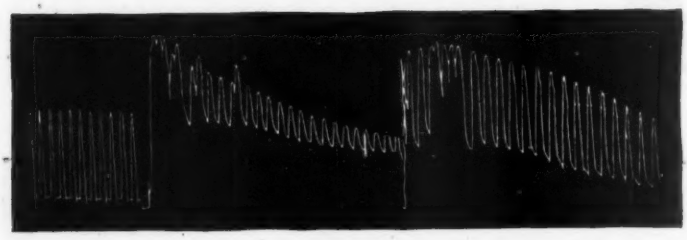
Strychnine. 1:160,000. Chloroform. 1:500. Their combined effects.



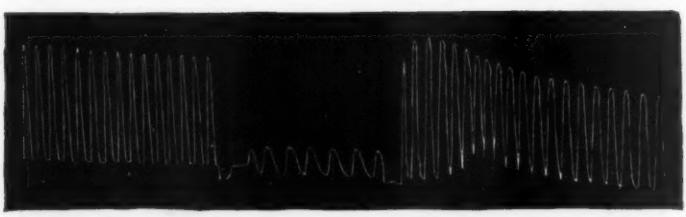
Veratrine. 1:160,000. Chloroform. 1:800. Their combined effects.



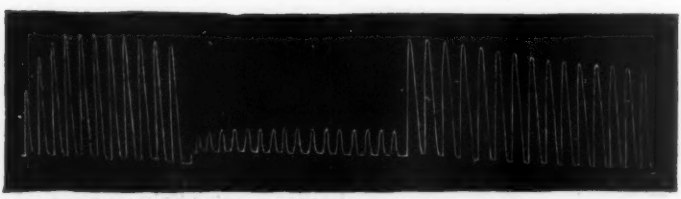
Atropine. 1:160,000. Curare. 1:50. Their combined effects.



Ammonia. 1:80,000. Soda. 1:1000. Their combined effects.

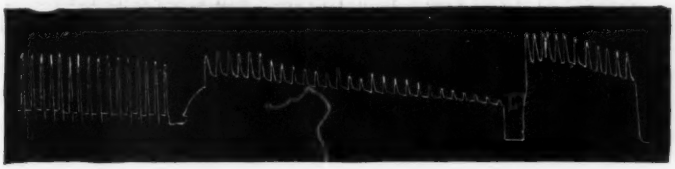


Atropine. 1:160 000. Strychnine. 1:1000. Their combined effects.

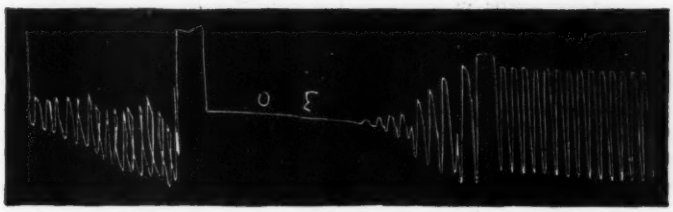


Strychnine. 1:160,000. Atropine. 1:2000. Their combined effects.

The following have no antagonistic action:



Atropine. 1:160,000. | Ammonia. 1:500. | Their combined effects.



Digitalin. 1:40,000. | Saponin. 1:3333. | Their combined effects.

DEDUCTIONS FROM THE FOREGOING EXPERIMENTS.

About six years ago I ventured the opinion* on an inductive basis that the great majority of our therapeutic agents operate on the body like physical forces; i. e., that motion developed by our therapeutic forces in an organic body takes place in the line of least resistance, and that drug action and organic reaction are always equal; and think I showed from this law that in small quantities our therapeutic agents enhance and in large quantities they depress or destroy vital action. Now experimental physiology long ago demonstrated that the functions of many organs can be modified by a purely physical agent like electricity, and that, too, precisely in proportion to the quantity of the latter agent applied. In the foregoing experiments I hope that I have added sufficient proof that this law holds good in the realm of therapeutic action as well. A general fundamental knowledge of the action of our medicaments wrought out in this way is no less desirable from a purely practical than from a purely scientific side, for until we have attained at least a proximate idea of such an elementary action, accuracy and precision in the application of our remedies are simply impossible. These experiments point out conclusively:

1. That all the agents employed have the capacity to effect two different kinds of action. Taking the traces which were produced by blood-solution alone, as a standard of the best work which the heart is capable of performing in a normal state, and comparing them with those obtained from minimum doses of any of the agents, it will be evident that the addition of the minimum dose of the agent to the blood-solution enabled the heart to perform more labor than it could do without it. Therefore these agents, if their doses are properly adapted, have a stimulating value over and above that which is obtained from the invigorating influence of the blood. Even such agents as bromide of potash, aconite, etc., which are never given in disease for any other than a depressant purpose, show, in common with the others, a marked stimulating effect in minimum doses. Not only is this feature true of the agents, the recorded researches of which form the body of this article, but it is equally true of the action of nearly a score of other alkaloids and active principles not yet fully investigated, indicating that it holds true of a great many, if not of the majority of our most important therapeutic agents. The depressant effects of our remedial agents, which the experiments also demonstrate, are too well known to require discussion; but we are taught here that it is idle to expect to obtain this phase of their action unless they are given in maximum doses.

This double feature in the action of our drugs is important to practical therapeutics. If they all have the same general action on the human organism, of which there cannot

* *On the Therapeutic Forces.* Philadelphia, Lindsay & Blakiston, 1878.

be a reasonable doubt, then it is a very interesting matter to administer them with a view to get their full beneficial effects—minimum doses as stimulants, and maximum doses as depressants.

2. The field of antagonism which is here touched upon, is another very interesting feature of these experiments. The possibilities of the subject are too many, and its area is too extended to permit a full discussion of it within the limits of this paper, and I will therefore say only a few words in behalf of the method employed, for I think the results of antagonism obtained here stand out simple enough to speak for themselves. Accurate results in experimental physiology, as well as in everything else, depend on accurate and trustworthy methods, and however much may be said against the scientific value of results obtained from an excised organ by those who have no experimental knowledge of it, it can be truthfully said, I think, that there never has been greater accuracy and precision shown in the whole field of experimental antagonism than that which is developed by the frog's ventricle with this method.* Here both the stimulating force of a minimum dose, and the depressing force of a maximum dose can be accurately measured and contrasted with their combined results.

151 North 15th st., Philadelphia.

THERAPEUTIC EVIDENCE.

BY PROF. ROBT. T. EDES, OF HARVARD UNIVERSITY.

IF ANYTHING becomes clear from a study of the medical journals of years past, it is that therapeutics is a branch of medical science of exceedingly slow growth, and notwithstanding the elaborate reports on progress in therapeutics which all well-regulated periodicals offer with considerable frequency to their readers, the real advance is slight. Unless, indeed we estimate progress by some instrument like John Phœnix's odometer, which registered one morning an amount of pedestrian activity which ought to have taken the wearer a long distance about his business, and was supposed to be greatly to his credit until it was ascertained that he had spent the previous night at a fandango.

It is asserted, and probably with truth, that the average length of human life in civilized countries is increasing, and this is attributed, also with much probability, to improvements in medical practice as well as to sanitary progress. But when it is considered how much of this improvement consists in judicious omissions we certainly cannot add a great deal to the score of therapeutics; at least in the narrower sense of the word, *i. e.*, pharmacology.

It is, perhaps, too much to hope that all this confusion and useless retracing of our steps will be done away with so long as human interests remain what they are, so long as the physician wishes to see himself an efficient agent rather than an interested spectator, and so long as apparently positive observations occupy so much wider an angle in the mental horizon than the disappointing and apparently valueless negative one.

But, since life is short and art is long, and the pages of medical journals longer still, is it not possible to condense somewhat our observations and increase their value by a little delay and sifting of the evidence, doing beforehand what we shall certainly be obliged to do afterwards, in throwing away a great deal of observation so vitiated by various errors as to be practically valueless?

So many elements of uncertainty are always present, so many observations are cut short or rendered vague and inconclusive by no fault of the physician that we must reconcile ourselves, however unwillingly, to throwing on one side as comparatively useless a large proportion of our hardly acquired facts.

One observation of recovery under any given treatment of any disease which is usually curable by many different plans, proves absolutely nothing as to the positive value of such a treatment. It only goes so far as to show that it is not fatal; and it may be that such observations can be considerably multiplied without gaining a great deal in force.

How many plans of treatment of pneumonia have been built upon series of cases terminating favorably in from seven to ten days, and yet such a result proves absolutely nothing as to any positive value in the treatment. Negative value they may have, for it is possible to do much worse.

What numerous statistics do we not possess of typhoid fever, of which the absolutely best treatment is even yet not decisively fixed.

We are warned not to fall into the error of *post hoc ergo propter hoc*, but, after all, what do we know of the *propter* in medicine except through the *post*? It is simply a question of how many *posts* shall suffice to make a *propter*,

* Thanks to Ludwig, Cyon, Kronecker, and Bowditch, to whom we owe this method.

and this number must vary with the particular relation of causation which it is desired to establish.

In the study of new drugs in relation to the relief or modification of well-marked symptoms, the efficiency may be determined by a small number, or even a single observation. It does not take long to determine whether a drug relieves pain or not. One capital operation under ether is enough. Of course many more are necessary to determine conditions of safety, avoidable or unavoidable inconveniences and so forth. And yet a gentleman announced a year or two ago that the analgesic effects of morphia given subcutaneously might be obtained from warm water administered in the same way. Quebracho has been used times enough to establish its value in certain forms of dyspnœa.

When the symptoms are more or less capricious and likely to terminate spontaneously it is by no means so easy to say whether the effect is due to drugs, to mental influence or to entirely unknown conditions.

How various are the opinions of authors as to the value in insomnia or nervousness, of lactucarium or lupulin, or even camphor in small doses. The writer has heard an obstetrician of large experience deny that ergot has any effect in exciting uterine contractions in labor.

When observations as to the effect of new drugs in the cure of diseases are to be considered, the first thing wanted is a diagnosis. The great feats of therapeutics are performed chiefly by those who trouble themselves little about this trivial point. Witness the results of sulphate of copper in cases of croup "supposed to have been" membranous; or subsulphate of mercury in the same disease if "the doctor be called early enough."

Anybody can make wonderful cures if he can have the naming of the disease without criticism, but if inquiries be pushed too far, the diagnosis may be found even more wonderful than the cure. Think of the success of homœopathy in "diphtheria," of the cures of Bright's disease diagnosticated by pain in the back and a deposit of urates in a cold chamber-pot! See the certificates of clergymen in the religious papers. Count the "cancers cured" by condurango.

If the diagnosis be accurate, small numbers may often suffice. It would take but few cases of recovery from well-determined hydrophobia to establish the reputation of any drug. If only a few cases of real cancer had recovered, Chio would have gained a wider fame from its turpentine than from its undivided seventh of the birthplace of Homer.

Beyond these instances of almost inevitably fatal prognosis, we find the large range of diseases where the results are varied and where recovery may be expected in a greater or less proportion of cases irrespective of the special treatment. Here the number of cases required in order to be of conclusive value is very great, and here also, not only the diagnosis, but the probable prognosis in each case is to be rigidly scrutinized. The greater the chances of recovery without drugs, the larger must be the number of cases required to show that the drug has power to save life. The more severe the disease (and this applies as well to individual cases as to different types) the more is a single case worth as a contribution to statistics.

When we get to the class where the risk is so slight that we are called upon only to relieve, to shorten, or to avert complications, "opportunity is indeed fleeting and judgment difficult," so seldom do we get exactly similar cases and the "control over such" is wanting It is hardly as yet proved to universal satisfaction that alkalies or salicylic acid shorten or alleviate the course of acute rheumatism, so good are often results without treatment. When possible we ought to look for distinct and definite effects of drugs. Of course there are cases where, as in the administration of arsenic in certain forms of anæmia, improvement takes place without our being able to say that the specific symptoms of the drug have anything to do with it, and there is no reason to suppose that the therapeutic action of iodide of potassium has any close relation to the coryza and acne it often produces; but on the other hand, can any one suppose he has given the alkaline treatment of rheumatism a fair trial because he has administered a few grains of carbonate of potassium and entirely failed to get any chemical evidence of decided super-alkalization of the blood?

Doubtless much good, as well as harm of which they are entirely innocent, is attributed to drugs when they are used in a routine way without regard to efficient dosage or production of physiological effects. The human organism is the true scale for dosage, and the doses of the books are averages or safe starting points. The reputation of cannabis indica as a hypnotic, or analgesic, in the mind of some practitioner, may be depending on the results of a dose of a few centigrammes, while the specimen he has happened to get hold of

is inert in the quantity of half or even a whole gramme. Physicians may think they are making an experiment of value when they are giving half-drop doses of extract of conium or of hyoscyamus. The results are worth exactly as much as those obtained from a decillionth of pulsatilla.

Some shrewd writer has remarked that, if any drug retains a high reputation among the laity for a long time, it is sure to be inert, for if it were powerful it would be certain to cause an accident in unskilled hands and thus lose its hold upon the popular imagination.

Reports of failure when drugs have been efficiently and intelligently tried, are worth more numerically than those of success. The earliest observations are almost certain to be favorable. The man who hastens to print his approval of what promises to be a new and effectual agent in the cure of disease is in no such hurry when he is disappointed, and contents himself with telling his neighbor so and lets the matter drop; so that we may be morally sure that for every case of failure reported, there are still others, known only to a limited circle and perhaps forgotten by them. All cases should be reported.

Finally, should weight be given to impressions and opinions? Yes. But here the "personal equation" assumes an enormous importance. We all know the sanguine man, whose therapeutics are those of the advertising pages, and who considers himself wide-awake and progressive on this account; and we know the other man, who never believes anything as long as he can help it. Accept the opinions of each and print them both if we have room enough, but give cases too, that we may know which to believe next time.

A CONTRIBUTION TO THE STUDY OF EUPHORBIA PILULIFERA

By Dr. A. Marsset, Paris, France.

I PROPOSE, in this article, to study the properties of a plant little known to the physicians of both continents, and destined, I believe, to render important service in the treatment of certain affections of the respiratory passages.

I do not claim to have made an exhaustive study, and leave much for those to investigate who shall take up the subject after me.

Nevertheless, I have a few new facts to offer, and my object will be attained if I succeed in directing the attention of scientific workers and therapeutists to the merits of this pill-bearing spurge.

My subject is divided into three parts.

I. History.
Botanical description.
Chemical composition.

II. Experiments on animals.
Analysis.

III. Reports of cases.
Physiological and therapeutical considerations.
General conclusions.

HISTORY.

I. Pison seems to have been the first to have spoken of Euphorbia pilulifera from a medical standpoint.* After having given an exact but incomplete description of the plant, he adds that, "if chewed or freshly-bruised leaves are applied over a snake bite, they not only assuage the pain, but even remove the venom, and heal the wound. A pinch of the dried powder, taken in some convenient menstruum, excites the heart and arouses the vital forces depressed by the poison."

Ainslie, in his Materia Medica,† describes, under the name of "pill-bearing spurge, a plant of India and Ceylon, which seems to have been either the Euphorbia pilulifera of Brazil, or a kindred species with lilac flowers." "The native physicians," he says, "employ the fresh juice as an outward application in apthous affections."

It is doubtful whether the plant alluded to by Lescourtilz‡, which he calls Euphorbia pilulifera, and an infusion of which is recommended by him as a "lenitive ptisan," in gonorrhœa, be really the botanical species under consideration; his description would in fact make it probable that he had in mind another species.

It is evident that the medicinal use of this euphorbia in certain pulmonary affections is of very recent origin. My attention was first directed to notices of this spurge in the Therapeutic Gazette. The first reference which I find is in the Therapeutic Gazette for 1882, p. 464, in which some Australian testimony as to the marvelous anti-asthmatic virtues of this plant, of the greatest interest to the medical profession, is given. It is described as follows (the Gazette article is reproduced from *New Commercial Plants and Drugs*): "This weed is common in town, growing in every garden and in the streets.

*Opera, Amsterdam, 1658.
†Ainslie, Materia Indica, London, 1826.
‡Flore Méd., des Antillas, Paris, 1821.

It is somewhat similar to the pig-weed, but the leaves are not succulent, and lack the acidity of the sorrel; further, they are covered with a light fur, similar to that on the verbena leaf, and at the joints from whence the leaves take their growth, a small cluster of seed-bearing flowers is found. On breaking the stalk a milky substance exudes, similar in appearance to the thistle-milk." A decoction of this herb, made by boiling a handful in two quarts of water till the quantity is reduced to one quart, is spoken of as being highly efficacious in asthma. Subsequent numbers of the THERAPEUTIC GAZETTE, in notices of the euphorbia pilulifera (see especially the volume for 1883, p. 352), confirm previous statements as to the virtues of the herb as a respiratory stimulant. Drs. Matheson and Shepherd speak in an unqualified manner as to the benefits which, in the treatment of asthma, they have derived from the pill-bearing spurge. In forty cases of asthma, some purely spasmodic, others complicated with chronic bronchitis, in which Dr. Matheson, of Queensland, employed the new remedy, he obtained most satisfactory results. Favorable testimony is also given by other practitioners (see the THERAPEUTIC GAZETTE for April and May, 1884; also the volume for 1883, pp. 392, 395, 418 and 436).

During the present year (1884) have appeared several communications from Dr. Tison, of France, on the euphorbia pilulifera, in which he embodies the results of personal researches and trials; *Vide*, *Cosmos*, May 17, 1884; *Rêvue du Monde Catholique*, July 1, 1884; *Conseiller Médical*, July 13, 1884. Dr. Tison, after a brief account of the euphorbiaciæ and the peculiar properties of many of the members of this family, describes the euphorbia pilulifera, gives its uses and modes of administration, and vaunts especially its beneficial effects in dyspnœa of asthmatic and of cardiac origin. He publishes the reports of two cases which the reader will find alluded to farther on.

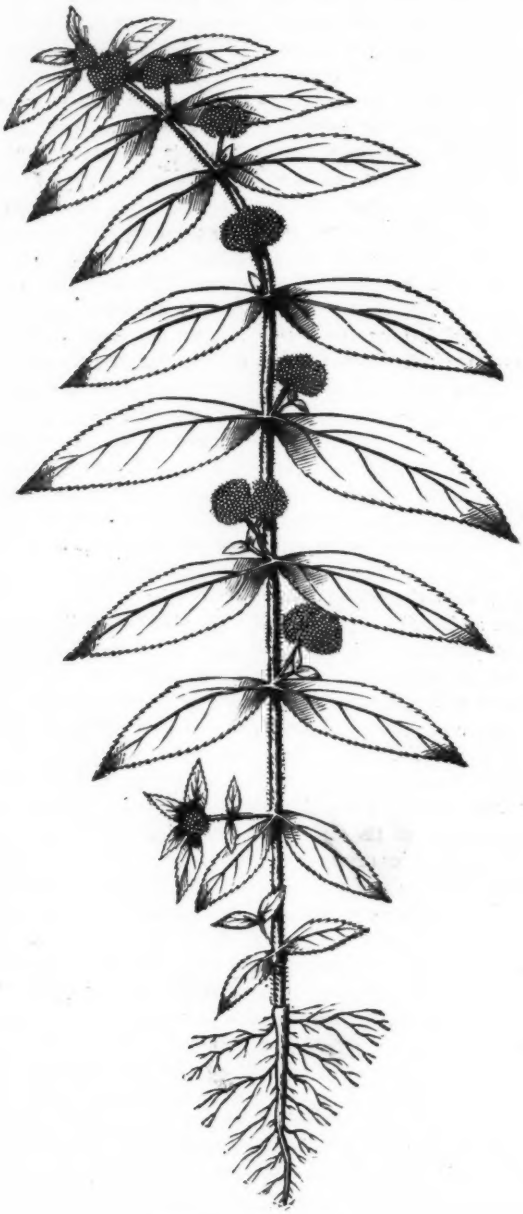
BOTANICAL DESCRIPTION.

The euphorbia pilulifera is a member of a genus which comprises 2,500 species, chiefly natives of South America. They are all distinguished by the acrid milky juice which exudes from the fresh plant, and which contains irritant toxic principles, varying in activity from that of a mild stimulant to that of the most energetic poison. The castor oil, croton oil plants, ipecac spurge, etc., belong to this family.

The euphorbia pilulifera is found only in equatorial regions, in many parts of which it is very abundant. Bentham, as cited by Tison, gives the following among other localities where this spurge abounds: "In all tropical America, from Florida and New Mexico to Brazil and Peru. In tropical Africa from the Western Coast to Mozambique. In the Mauritius, in the East Indies, in the South Sea Islands, in China, in Japan, the Sandwich Islands, in Ceylon, in Australia, in the Province of Queensland, near the bay of Rockingham, and all about Rockhampton." This plant is known under several different names, such as snake-weed, flowery-headed spurge, cat's hair, pill-bearing spurge, etc.; every country has its special appellation. It cannot be said that this herb, growing in regions so widely apart, does not present differences in properties as well as in form, feature, and habitat; these variations I cannot attempt to follow out, but will describe the variety which served for my experiments. It came from Australia, from the Province of Queensland, and was given me by M. Petit. The figure which I here produce represents the dried plant, and gives a fair idea of the Australian spurge as it comes to us in France.

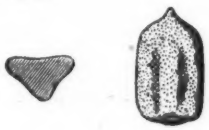
Euphorbia pilulifera is an annual herbaceous plant, thriving in all soils, and very difficult to exterminate. The fibrous root is red when fresh, reddish brown when dry. The stalk is 10 to 15 inches in length, is thin, round, reddish, more or less procumbent, leafy, sometimes simple, sometimes branching; it is covered with yellowish hairs, especially numerous at the upper extremity. The hairs are composed of a variable number of flat, rectangular cells, growing shorter and increasing in breadth from the base to the apex which is formed of one triangular cell. These cells are soldered together on one side so that two neighboring cells are on a plane exactly perpendicular to each other. (See figure 3). This disposition of the cells composing the hair seems peculiar, and I have never seen it anywhere described. Repeated macerations of these cells in various liquids (saline solutions, dilute spirits, water, ether, glycerine, etc.) have convinced me that this appearance of the cells is not due to their desiccation. The leaves when fresh are of a fine, deep green, mixed with red on the upper surface, but brown when dried, are opposite, oblong, ovate or lanceolate, an inch and a half to two inches long, and a little more than an inch in breadth, finely denticulated and slight-

ly hairy above and below; one side is somewhat constricted at the base. They are provided with a short petiole, and from the midrib proceed a very few divergent, non-symmetrical veinlets. They have been compared to the leaves of spearmint and pellitory, but are a little thicker, and they have an oily savor joined to a slight astringency and acidity, not at all disagreeable. If you cut or tear them there issues a little white, thick juice which is without acridity. Each petiole is accompanied by two minute linear dentated stipules. In the axils of the leaves, on alternate sides of the stem, are the peduncles which bear a great number of minute, reddish-white flowers, grouped in globular heads,

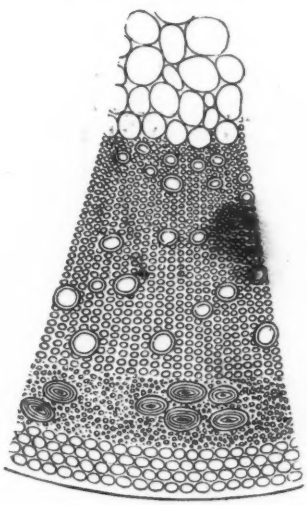


EUPHORBIA PILULIFERA.

which are single when growing from the shorter peduncles and double when found on those that are longer. The corolla has four, rarely five petals. The involucres are very small, hairy without and smooth within, with triangular, finely dentated lobes. The glands are orbicular concave, with minute appendages. The styles are very short and capitated at their bilobed extremity. The fruit (capsule) first red, then green and brown in the dried plant, consists of the seeds enclosed within three carinated valves covered with yellow hairs like those of the stem. The three seeds resembling, according to Dr. Tison, a coffee grain, are reddish, acute, oblong, and rugose.



SEED.



SECTION OF THE STEM.

Figure 2.

Figure 2 exhibits the fruit under two aspects, the seed and a section of the stem. This section shows first the four rows of globular epidermal cells, below which is a second zone compose of smaller cells enclosing the fibres of the liber, isolated and distinct. Next in order come the woody bundles and the pith, which offer no peculiarities.

CHEMICAL ANALYSIS.

As a result of a most painstaking analysis, for the details of which I must refer the reader to my published *brochure*, I may say that the plant yields all its active principles to water, and that water is the very best vehicle for the preparations of this euphorbia. I can give but little information concerning the composition of the aqueous solution. It reddens litmus, and gives with salts of iron a violet, almost black, color ; it precipitates albumin ; it seems, then, to contain tannin. It gives no precipitate with iodide of potassium, the double iodides of potassium and mercury, the double cyanides of silver and potassium. It would appear, then, that it contains no alkaloid, or if one exists in the watery solution, it must be in very feeble proportion. Evaporated to dryness, this solution gives rise to a deep reddish-brown substance, with vitreous fracture, aromatic odor, and a very weak but characteristic savor. This extract is soluble in water in all proportions, insoluble in alcohol at 90°, in ether, chloroform, etc. It burns in the flame of a spirit-lamp without coloring it. Calcined in a capsule, it disengages thick fumes of disagreeable odor, and leaves behind a carbonaceous residue.

PHYSIOLOGICAL EXPERIMENTS.

I had no data respecting the physiological action of euphorbia pilulifera when I commenced my experiments on animals, and credit myself with having been the first to investigate this side of the subject.

My experiments have been, for the most part, made in the Hospital Cochin, in the therapeutical laboratory of Dr. Dujardin-Beaumetz, under the friendly direction of Dr. Bardet, chief of the laboratory. The subjects of these experiments have been frogs, hares and Guinea pigs. I employed always the aqueous or the hydro-alcoholic extract diluted with distilled water. I found no perceptible difference in the action of these two preparations, nor between the filtered solutions and those that were not filtered; the brownish powder which remains on the filter being, as I have shown, completely inert.

EXPERIMENT I. Six green frogs of medium size, all about equal in weight, from the same pond, were put in different vessels. By means of a Pravaz syringe, the needle of which was introduced under the skin of the back, were injected the following quantities of the aqueous extract, diluted in one cubic centimeter of distilled water; each frog being the recipient of a different dose.

No. 1 received	.....	25	milligrammes.
" 2 "	.....	5	centigrammes.
" 3 "	.....	10	"
" 4 "	.....	15	"
" 5 "	.....	20	"
" 6, one cubic centimeter of distilled water only			

N s. 1, 2 and 6 showed no toxic symptoms. No. 3 seemed restless, with sudden startings; abdomen retracted. Recovered in two hours. No. 4 died in five hours; No. 5 in three hours after the injection. The necropsy showed the lungs to be empty, but normal in appearance; ventricles and auricles full of thick, dark blood; gall-bladder distended with deep-green bile.

EXPERIMENT II.—Two green frogs, one of large size, the other small, were placed in a little cup containing five centigrammes of aqueous extract, dissolved in 250 grammes of water. No toxic symptoms followed.

The next day the water was changed; a similar quantity of the same solution being substituted. Two other green frogs, one large the other small, were put into a solution of just double the strength; their bodies were three-fourths immersed in the liquid.

During the night one of the animals in the strong solution died, the three others continued to all appearances well.

EXPERIMENT III.—A green frog of middling size was placed in a glass vessel containing a solution of 15 centigrammes of aqueous extract in 250 grammes of pure water. He appeared very much agitated, endeavored to escape from the vessel, which he was prevented from doing by the glass cover; died in six hours.

Necropsy gave the same results as in experiment 1.

It seems, then, that in the green frog the toxic dose of this extract varies between ten and fifteen centigrammes, corresponding to about a gramme of the dried plant.

My experiments have enabled me to determine this proportion: Fatal toxic dose for a frog weighing 20 grammes, one gramme of the dried leaves; this ratio generally obtains.

EXPERIMENT IV.—A male Guinea-pig, weighing 450 grammes, 9.30 a. m. Subcutaneous injection of 25 centigr. aqueous extract, diluted in one grm. of distilled water.

9:40 a. m. The animal eats several spears of hay, which were in his cage. I place before him a saucer full of bran; he devours it with apparent relish.

10:15 a. m. Not the least toxic symptom. A new subcutaneous injection of 25 centigrm. He utters cries for several minutes, makes several turns about the cage, running; then curls himself up in the form of a ball in one corner.

11 a. m. The same condition.

3 p. m. Has not changed his position. No troubles of sensibility or of motility.

9 p. m. The same condition.

The next morning at eight o'clock he was found dead near his saucer, in a natural attitude, as though he had gone there to eat.

Necropsy—Lungs injected, otherwise normal; heart in diastole, dilated, full of dark, thick blood; gall bladder distended, large as a nut, full of a greenish-yellow fluid. Nothing else worthy of note.

EXPERIMENT V. — A male guinea-pig weighing 510 grm.

10 a. m. Subcutaneous injection of 20 centigrm. of aqueous extract, diluted in 1 grm. of distilled water.

10:15 a. m. New injection of 20 centigrm. The animal is set at liberty.

No toxic symptoms. Was under observation six days.

In the following experiment the remedy was introduced by the alimentary canal:

EXPERIMENT VI. — Female guinea-pig weighing 600 grm. 2 p. m. Administered by mouth 60 centigrm. of aqueous extract dissolved in 6 grm. of distilled water; respiration 74.

3 p. m. The animal remains quiet in the corner of the cage. Respiratory movements accelerated to 96. No alteration of sensibility or of mobility.

6 p. m. Respirations 104. Eats with avidity.

6 p. m. Respirations 60.

7:30 p. m. Respirations 32. Sensibility diminished, perceptions dull, mobility enfeebled.

9. p. m. Respiration insensible. Falls over on the left side and dies.

Necropsy — Lungs very much injected, emphysematous along their free border. Bronchi and trachea full of reddish froth, with multitudes of fine air bubbles.

Heart in diastole full of blood. Gall-bladder very large, distended with green bile. Stomach: Hyperæmia very marked about the lesser curvature, between the cardia and pylorus. Nothing further worthy of note.

EXPERIMENT VII.—An adult female guinea-pig; weight 580 grammes, (or a little more than a pound avoirdupois.)

Was made to eat 40 centigrammes of aqueous extract, dissolved in 4 grammes distilled water.

Was killed two days after. Necropsy disclosed well-marked congestion of the mucous membrane, between the cardia and pylorus; gall-bladder distended; spleen tuberculous

Numerous experiments have shown that an ordinary-sized guinea-pig succumbs

after having absorbed from 50 to 60 centigrammes of the extract, equal to 3 to 4 grammes of the dried plant; or, to be more mathematically exact, for every 100 grammes weight of the animal, 1 gramme of the dried plant is required.

Knowing the toxic dose, I also sought to find if the medicament is cumulative. For this object I have kept several frogs and two Guinea-pigs under the continued operation of small doses for several successive days. The details of these experiments I shall omit here; suffice it that there was entire absence of all phenomena characteristic of accumulation. In one instance gangrene of the skin was produced, as, in fact, it always was in all subsequent experiments whenever the dose of the extract, injected subcutaneously, exceeded five centigrammes for one gramme of the solvent. In the experiments above given (VI and VII), the hyperæmia of the gastric mucous membrane was limited to the place where this viscus was sure to come in contact with the solution.

Other experiments have shown that this pathological state is not constant in all animals after swallowing the extract in solution, although an irritant hyperæmic result generally follows. A strong solution certainly has no effect on the healthy skin. I have kept for 12 hours on the anterior aspect of the forearm of a man, quite a thick coating of the aqueous extract, without the least subjective or objective symptom being noted. The taste is slightly styptic, owing probably to tannin in the extract. No redness or smarting follows its application to the tongue or buccal cavity. It has no effect on the rabbit or Guinea-pig; I may say the same for the rectal mucous membrane. Injected under the skin, as before said, the results are more baneful; gangrene following a certain dose.

ACTION ON THE HEART.

I have made several experiments on frogs and hares to ascertain the effect of this tropical spurge on the heart and circulation. For the details of these experiments the reader is again referred to my published thesis,* suffice it to say, that in the case of the frog, the action of the medicament on the circulation in the arterioles and capillaries was studied in the tongue of the living animal; the little batrachian, wrapped around with a sheet of wet blotting-paper, was fastened by his feet and lower jaw to a flat piece of cork pierced in front of the head by a round hole over which the tongue, well drawn out, spread and moistened, was pinned; over this was placed a thin cover-glass, and the circulation before and after the subcutaneous injection of euphorbia extract was carefully examined under a sufficient power. The quantity injected was such as had been previously found to have a toxic effect. A moderately toxic dose was sure to be followed by a brief acceleration of the arterial pulsations (I always took care to have an artery and vein in the field of the microscope); then there was a gradual slowing, till, coincidently with the arrest of the heart in diastole, the circulation stopped altogether. In the case of the hares the same period of acceleration was noticed, but it was much longer than in the frog. When larger doses were administered, the slowing of the circulation came on immediately. With regard to the capillaries, no change in the dimensions of these vessels under euphorbia was observed.

*Published by Le Mans, Imprimerie Albert Deouin, Paris, 1884.

ACTION ON THE RESPIRATORY FUNCTIONS.

In the experiments made on the frog, it was easy to count the respirations by watching the rising and falling of the os hyoides, as this animal breathes by swallowing air. The number of cardiac pulsations was easily counted at the same time by the aid of a lens and an oblique illumination. In a healthy frog, pinned to a flat piece of cork, the movements of deglutition became very rapid after several minutes (owing to fear, pain, etc.), as the following experiment shows:

EXPERIMENT VIII.—A medium-sized brown frog—

		Movements of deglutition.	Heart pulsation.
9:30 a. m.	Pinned to a piece of cork.		
9:32	"	.... 88.	66.
9:40	"	.... 96.	74.
9:45	"	.... 110.	64.
9:50	"	.... 130.	64.
10:00	"	.... 160.	64.
10:30	"	.... 160.	64.

It is not, then, to euphorbia that we are to attribute in the following experiment the greater frequency of the respiratory movements at the commencement. On the other hand the consecutive slowing is very noticeable.

EXPERIMENT IX.—A medium-sized brown frog. Pinned to the cork tablet at 2:30 p.m.:

	Movements of deglutition.	Apex heart beats.
2:32 p. m.....	80	64

Subcutaneous injection of 10 centigrammes of extract:

2:40 p. m.....	96	70
2:45 p. m.....	112	58

Marked retraction of the abdomen.

2:48 p. m.....	112	52
2:50 p. m.....	120	52
3:10 p. m.....	120	48

New injection of 10 centigrammes:

3:15 p. m.....	134	40
4:20 p. m.....	134	28

Every minute for 15 or 20 seconds complete suspension of every respiratory movement:

3:25 p. m.....	106	26
3:40 p. m.....	110	40

Complete arrest of respiration for 1 minute.

3:44 p. m.....	84	40

The animal breathes only at long intervals; precordial shock imperceptible.

3:50 P. M.—Respiration has ceased; violent cutaneous irritations recall it for a few seconds; sensibility diminishes rapidly; motility persists.

4 P. M.—The heart is exposed by dissection. A few rapid movements of deglutition, followed by very slow cardiac contraction (6 per minute).

4:15 P. M.—The heart is arrested in diastole.

In the Guinea-pig the same results have been noted. (Vide experiments XIX. and XX. of my thesis). The respiratory movements are first markedly quickened, then slowed; the rise being at first from 38 per minute to 100, 108, 130; then there is a gradual fall to 50, 40, 36 and 30 when death ensues. In the Guinea-pig and hare the toxic result was much more speedy and certain when the extract was ingested per os than when introduced subcutaneously, absorption by the cellular tissue as well as by the peritoneum being very difficult and imperfect.

The above experiments, as well as others not recorded here, go to show clearly that under the influence of euphorbia the respiratory movements, as well as the pulsations of the heart, are first accelerated, then retarded; the former cease first. Careful experiments made* to ascertain if the medicament has any direct action on the lungs have not shown the least variation in the dimensions of the blood-vessels, bronchi or alveoli.

Euphorbia pilulifera, moreover, seems to have no action on the spinal cord; not the least alteration in sensibility and motility being noted in animals poisoned by it. It is equally without effect on the muscular system; as repeated testing by electricity of muscular contractility in subjects of experimentation has proved. It is also noteworthy that the calibre of the capillary vessels has in no instance seemed to be modified under the toxic influence of this medicament. The action of the euphorbia on the secretory glands seems, moreover, to be nil.

*Namely, by means of producing a hernia of the lung. See experiment XX. of the published thesis.

ELIMINATION.

Having no certain chemical test for euphorbia, it has been impossible for me to detect its presence in the different organs. The particular odor of the extract is not perceptible in the breath, urine or fæces of animals to which it has been administered.

The active principle is probably a gum resin. It has seemed to me likely that this is eliminated by the liver. In animals killed by it I have always found the gall-bladder distended, whether digestion were going on or not. This condition can hardly be explained by spasm of the bile ducts. In animals, moreover, which were fed on bran, the fæcal matters were not changed in color or in consistence under the influence of enormous doses of euphorbia pilulifera.

Is it probable that there is a hyper-secretion of bile? I don't think so; besides the unaltered consistency of the fæcal matters, I have never found in the intestines bile in sufficiently large quantity to favor the view that there was a more abundant secretion.

There remains the third view: elimination of the active principle by the liver. This I advance as a simple hypothesis, but one in harmony with the facts; it cannot, however, be said as yet to be based on sufficient scientific evidence.

I do not pretend to have given a complete description of the action of this spurge on small animals. Its influence on blood tension, on general nutrition, etc., has not been studied.

The two essential phenomena of its action: acceleration, then slowing of the respiratory movements, and of the cardiac pulsations, are undoubted. As for the mechanism of this action, I have no satisfactory explanation to offer. Clinical observations and the results of the necropsy in several of my experiments on animals, are in accord with the lesions and

their phenomena so well described by Vulpian in the case of animals which succumb to section of the pneumogastric. See especially experiments VI and VII. In the case of two other animals, a hare and a guinea pig, I found a congestion less marked, but a well-pronounced emphysematous condition of large portions of both lungs, especially of the upper lobes.

PART III. CLINICAL OBSERVATIONS.

Case 1. (Borrowed from Dr. Tison.) Mr. C., aged 45, commenced two or three years ago to experience attacks of shortness of breath (paroxysmal dyspnœa), which came on in the night time, once every week or fortnight. Last summer (in 1883) these spells of dyspnœa became almost continuous, existing in the day-time as well as in the night. The patient could not sleep, and what was even worse, he could not lie down; was obliged to be propped up in bed. He coughed a great deal, and snoring and whistling râles were quite audible all over the chest during the attacks. I treated him first by calmative potions, iodide of potassium, dry cups, etc., which gave some relief. But four or five days after the paroxysms became more severe. I then recommended the decoction of euphorbia pilulifera.

He commenced the use of this medicine in the morning; that very evening he could lie down and sleep quietly, which he had not done before for two months. This was in August, 1883. At that first trial Mr. C. made use of two quarts of the decoction. Since then he has resorted to the same medicine in the same quantity, on two different occasions, and with equally good results. He has not had an attack of the asthma since this period, and has been able always to go to bed at night, and to lie down without any return of his old trouble.

Case II. (Borrowed from Dr. Tison.) Marie D., aged 45 years, has had much trouble, hardship, and disappointment. Since 16 years of age has been clerk in a store. For a long time has been subject to bronchitis. Since the end of December, 1878, she began to suffer from attacks of asthma at night. She was then obliged to keep her room for three months, and in spite of various kinds of treatment employed by her physician (vesicatories, morphine, antimony, etc.), the attacks of shortness of breath returned regularly every night. Her condition improved a little, but she continued to suffer from paroxysms of dyspnœa, which returned more or less frequently, always in the night time, and generally between 2:00 and 7:00 o'clock a. m. These asthmatic paroxysms terminated by fits of coughing, accompanied with sibilant râles and various other morbid sounds in the chest, and expectoration at first of frothy, afterwards of ropy mucus. In a word, she had been in a bad hygienic condition, and for five years, despite the application of more than a hundred blisters and the use of much medicine, she has not been able to work more than half of the time.

There was almost always a teasing cough which was, if anything, worse when the attacks of asthma diminished in frequency. The 10th of April Madam D. put herself under my care. Auscultation revealed prolonged respiration on the right side in front, snoring ronchi in front and on the left. Behind, these ronchi were more pronounced on the right side than on the left. The sonorous râles were more marked in the upper portions of the thorax than below. There was nothing abnormal about the heart. The patient could not sleep; it was often impossible for her to lie down. During a part of the night she was obliged to sit up in bed supporting her head in her hands, her elbows resting on her knees. I instituted a treatment in which the euphorbia pilulifera had the principal part. From that time the shortness of breath ceased, and Mrs. D. has not been obliged to absent herself from her store but two days since the commencement of the treatment, and this was not on account of asthma. The first of June there were no longer any abnormal bruits perceptible to auscultation. The vesicular murmurs and percussion sounds were good, in fact, respiration seemed to be quite normal. The cough had disappeared, or nearly so. The appetite and general health were restored. In two months and a half this patient took eight litres of decoction of Euphorbia. During the first few days of July there was a new attack of asthma; it was the time for her monthly period—always to her a painful season. The paroxysm was controlled, as completely as previously, by the decoction of Euphorbia. At the present time a few bronchial râles are audible, but there is no respiratory spasm, and the air penetrates the lungs with facility.

Case 3. Syphilis, Malaria, Asthma. — C. Louis, aged 47, had been a soldier during the campaign in Mexico, where he had contracted syphilis. Was treated for this disease with Van Swieten's solution and other remedies, at the military hospital. Was after-

ward in military service in Italy, where he became afflicted with paludal cachexia and asthma. The attacks of dyspnœa came on regularly, in the night-time, and were very violent. He became pale, lost his strength and was discharged from service on half pay. He passed three months at the hospital Clermont-Ferrand, where he regained strength and flesh, recovered from his asthma, and returned to his native place and his farm.

About five years afterward, (in 1879,) he began again to be afflicted with attacks of dyspnœa, at first far apart, and of moderate severity, coming on only during the heat of summer.

This year (1884), during the months of June and July, he first came under my observation at the hospital Clermont-Ferrand, where he was readmitted for his asthmatic trouble. He was suffering from repeated crises of dyspnœa, which were long and intense; in the intervals of these attacks he was much oppressed by labored breathing and cough. From the 10th of July was unable to lie down at nights; would awake from a brief repose by a general sense of distress, which soon became extreme anguish. He would run to the window, seize with both hands the frame as a *point d'appui*, lean forward, and tug with all his might for breath. The attack would last an hour, then, with the advent of a limited amount of viscid, muco-purulent expectoration he would obtain relief. There were generally three or four of these attacks in the night time; never any in the day. Considerable dyspeptic trouble (gastric distension, eructations, uneasiness after eating etc.) of late had been experienced.

I examined him Aug. 28. There was a clear emphysematous percussion tone in front, under the clavicles, and along the left border of the sternum. A slight increase of the precordial dullness; the same may be said of the hepatic dullness. There was marked enfeeblement of the vesicular murmur on the right side, under the clavicle; it was inaudible on the left. Behind, on both sides, sibilant and snoring ronchi. Heart sounds normal. Urine normal.

I began the treatment by Euphorbia pilulifera, giving him every night at bed time 5 centigrammes (1 grain) of the aqueous extract, in a cup of hot pennyroyal tea.

The first day, one single attack of asthmatic suffocation, quite as intense as the previous attacks.

The second day he doubled the dose; felt himself greatly relieved within two hours, and for the first time within forty days was able to lie down and sleep all night.

The following week the improvement continued; the bad breathing spells did not reappear. Then, on account of a return of the gastric troubles, he left off the euphorbia. This was followed by a cessation of the dyspeptic symptom. I have had this patient under observation almost continually till the present time (Oct. 27th, 1884). Since Sept. 15 he has been taking daily small doses of iodide of potassium. He has had no attack of dyspnœa since the last of August, and has been able to do hard work on the farm; his breathing apparatus seems to be in a normal condition. This case is very satisfactory, as showing the certainty of the benefits derived from euphorbia, since the sudden disappearance of the asthma can be attributed to no other remedial cause.

Case IV. Service of Dr. Dujardin-Beaumetz. The subject of this observation was an asthmatic patient, affected with chronic bronchitis and emphysema. Name of the patient, Joffre J——., aged 53 years. Mother asthmatic, father an inebriate. Entered hospital Cochin July 10th, 1884. Had been more or less afflicted with chronic bronchitis since 1878; once was kept three months in bed from an acute attack. Every winter for the past six years has been a continued sufferer from paroxysms of dyspnœa coming on the latter part of the night, especially in stormy weather; these attacks would last an hour or so; were followed by copious muco-purulent expectoration. In 1884 these attacks came on in the summer, and became very frequent. The emphysematous condition was very marked; bulging of the thorax, obliteration of the supra-clavicular hollows, increased sonorousness, prolonged expiration, bronchial râles all over the chest. The nights were passed in a sitting posture. Various remedies (as hypodermics of morphia) were given for the dyspnœa, but with little effect. Euphorbia pilulifera in 10-drop doses of the tincture, increased to 20 drops *pro re nata* brought the first real relief. She began the remedy the 15th Oct., and by the 30th was so far recovered as to be able to sleep well at night in a recumbent posture, and the cough and humid râles had well nigh disappeared. The euphorbia was attended with some nausea and gastric oppression. Mlle J. left the hospital Cochin on the 30th ult.

Case V. This case was similar in character to the preceding. P. A——., moulder, aged 44, entered the Cochin Hospital July 1st

under the care of Dr. Dujardin-Beaumetz. Omitting particulars as to history, I may say that when this patient first came under my observation, the signs of pulmonary emphysema were marked, and there were bronchial râles all over the thorax, front and behind.

A paroxysmal teasing cough, with mucopurulent expectoration; nocturnal fits of asthma. The shortness of breath was apparent after exercise: aggravated by severe weather, and sudden changes of temperature. The 21st of July he had a very severe attack of dyspnœa in the night time. July 22d he began the euphorbia, taking ten drops of a five-per-cent, dilute alcoholic tincture before going to bed. This remedy was continued till the 27th. The cough and expectoration continue, though a little less painful; the respiration is more full.

August 2.—All the symptoms have improved; there has been no return of the dyspnœa.

August 28th.—The patient has so far recovered as to leave the hospital for resumption of his occupation.

In my published thesis I have detailed reports of six other cases, in all of which the new remedy was of the most marked benefit. The first concerned a patient of Dr. Jardet, interne of the hospitals. This patient was suffering from asthma, connected with chronic bronchitis and emphysema. After the failure of potass. iodide, datura, belladonna, etc., euphorbia pilulifera was administered; five centigrammes of the aqueous extract being given in a teaspoonful of syrup. This was without effect. The dose was increased to ten centigrammes, and the greatest relief followed.

After a few days she left off the remedy on account of dizziness following its use, but after a few days resumed it, owing to a crisis of dyspnœa, and always experienced benefit as far as the breathing difficulties were concerned, although giddy sensations (as though she were drunk) always accompanied its action.

The next case was one of asthma and emphysema, under the care of Dr. Dujardin-Beaumetz. The nocturnal crises of dyspnœa were most painful. There was, however, complete disappearance of the paroxysmal breathing under the daily use of five centigrammes of aqueous extract of euphorbia.

The case of I. X., a seedsman, under the care of the writer, is interesting, as illustrating the benefits of euphorbia extract in a case of asthma with a limited emphysema, due originally to an unhealthy occupation, involving respiration of air charged with irritant dust particles. Patient was continually out of breath during the day while engaged in active employment, and had nocturnal asthmatic crises. Was relieved in a most striking manner on taking, for a few days, five centigrammes of aqueous extract just after the evening meal.

Cases XI and XII were patients of Dr. Dujardin-Beaumetz. One had chronic bronchitis and asthma. The crises of dyspnœa speedily yielded to ten-drop doses, every evening, of tincture of euphorbia. Case XII. concerned a case of emphysema with asthma. This patient had worn out all the ordinary remedies; but he obtained pronounced benefit from the euphorbia, which was continued for several months during the past year (1884). The relief has not been permanent, the nocturnal crises returning when the medicine was suspended, and being of a most intense and exasperating nature. Nevertheless a resort to this medicine has never failed to arrest or mitigate the asthmatic paroxysms.

REMARKS.

Of the twelve patients who were the subjects of the above reports, eleven suffered from crises of dyspnœa with or without emphysema and chronic bronchitis. In some the respiratory distress followed pulmonary disease, in others it preceded all other symptoms. All these patients derived the greatest benefit from the euphorbia; some of them seemed to be radically cured under its use.

INDICATIONS.

The capital symptom calling for this new remedy is paroxysmal spasmodic dyspnœa. From whatever cause this may arise, the relief obtained from the euphorbia seems to be speedy and certain. Dr. Tison gives favorable reports of this medicine in dyspnœas of cardiac origin. I have had no personal experience with it in such cases. In all my patients the heart and kidneys seem to have been sound.

The euphorbia pilulifera has not seemed to have any action on the cough and expectoration in chronic bronchitis, nor has it seemed to modify the râles of humid asthma.

In the uræmic asthma of renal disease it would seem theoretically to have little power, although, as a general respiratory stimulant it may here render service, as in the paroxysmal dyspnœa of pertussis, spasmodic laryngitis, and angina pectoris. I have not ob-

served the tonic and slightly narcotic properties noticed by Dr. Matheson.

MODE OF ACTION.

Euphorbia acts in two ways: Locally on the stomach (as seen in experiments on animals), and after having been absorbed, on the respiratory functions. The topical gastric effect probably exists in man, since the subjects of several of the observations (IV, V, XIII) experienced a degree of nausea with epigastric pain after taking the tincture or aqueous extract; these symptoms disappeared with suppression of the medicament. I was inclined to refer these symptoms to the local effect of the medicine rather than to any trouble in the functions of the vagus.

In animals euphorbia has been shown to modify the respiration and circulation. In the necropsy lesions have been found comparable to those which follow death by section of the vagi nerves.

In the human subject in an affection which seems especially to depend on a particular neurosis of the pneumogastric, you obtain by administration of the drug, a remarkable sedation of the spasmodic symptoms and of these only. We seem then justified in concluding that the good results of the euphorbia are due to a particular modification of the functions of the pneumogastric, and that it is rather on the medullary centre of this nerve than on the nerve itself that it acts.

MODES OF ADMINISTRATION AND DOSES.

The active principle is soluble in water and dilute alcohol. To avoid irritation of the gastric mucous membrane it is well to employ a considerable quantity of the aqueous vehicle and to give the remedy immediately after or in connection with meals. The aqueous or hydro-alcoholic extract is a good preparation; it keeps well, and is easy of transport. I have never exceeded a dose of ten centigrammes (two grains); generally five centigrammes produces a marked effect.

The dried plant in decoction is a good form of administration; half an ounce to two quarts of water is the proper proportion; two or three ounces of dilute alcohol may be added to keep it from spoiling; the dose would be three or four wineglassfuls a day.

In the service of Dr. Beaumetz the tincture was often employed in doses ranging from 10 to 30 drops; one gramme of this tincture represents five grammes of the plant.

CONCLUSIONS.

1. The active principle of euphorbia pilulifera is soluble in dilute alcohol and water, insoluble or but little soluble in ether, chloroform, di-sulphide of carbon and essence of turpentine.

2. It is toxic in small doses to small animals, killing them by arrest of the respiratory movements and cardiac pulsations, which are first accelerated, then slowed.

3. Its effects are not cumulative.

4. It seems to act directly on the respiratory and cardiac centres. It leaves intact the other organs.

5. It seems to be eliminated by the liver.

6. Locally it is without action on the skin and mucous membranes except the gastric mucous membrane, which it irritates.

7. It gives good results in attacks of dyspnœa caused by spasmodic asthma, emphysema or chronic bronchitis.

It ought to be employed in daily doses corresponding at the most to one gramme of the dried plant, and should be taken well diluted with water at meal time.

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*HYSTERICAL AFFECTIONS OF THE EYE.**

By Geo. C. Harlan, M. D., Philadelphia.

AS IT IS well known, patients in the psychological condition called hysterical, may not only present almost any symptom of disease without the existence of any lesion to which such symptom could be referred, but sometimes make excursions beyond the limits of classical pathology, and puzzle their doctors by originating symptoms that no possible lesion could explain.

It has seemed to me that the eye is an exceptionally pregnant seat of such affections, and that their occurrence there has hardly received the attention from neurologists, or perhaps even from ophthalmic surgeons, that might with advantage be given to it. The accuracy with which eye symptoms may be analyzed, and the comparative certainty with which material changes in the tissues of this organ may be excluded, afford special facilities for the study of its functional neurotic disturbances, which may often furnish the key to mysteries in other regions.

It is not my intention to trespass upon your time and patience by an extended discussion of this rather wide subject, but merely to direct attention to it by describing some of

*Read by request before the Philadelphia Neurological society, Jan 26, 1885.

the symptoms of this class that have been met with in my own experience. As the shortest way of accomplishing this end, I will consider them in the anatomical order of the parts affected.

The lids are subject to both spasm and paresis of an entirely hysterical character. The former was well illustrated by a case recently published in the *Medical News*, in which violent and persistent blepharospasm, which had resisted other treatment for months, was cured at last by mental impression. The latter occurs in a singular form of transient paresis of the levator, occurring only on rousing from sleep.

The subjects of this affliction complain of a great difficulty, sometimes an entire impossibility, of opening the eye on awakening. In some cases this occurs always in the morning, in some even after a nap during the day, and in others only when aroused during the night, when perhaps the consciousness and will power are regained less promptly. Such patients say that the lids seem too heavy to be moved by their own muscles, but after they have raised them with the finger, or bathed them in cold water, the difficulty does not recur until they sleep again. My attention was first called to this symptom some ten years ago, and I have met with so many cases since that I have come to consider it not very uncommon. Both eyes are usually equally afflicted, but in several instances only one was involved. In one of the latter now under my care, the afflicted lid has a slight degree of granular conjunctivitis, which could scarcely have other than a mental influence as a cause. With one exception, the subjects were all delicate women, some of them nursing. Of course this is not a symptom to be lightly considered without a careful investigation of the patient's general condition. The first time that I noticed it, it was one of the earliest indications of intercranial tumor, which, a few months later, caused the patient's death.

Singular action of the external muscles of the ball is so frequently met with in nervous subjects, that a well-known ophthalmic surgeon has discovered it to be the cause of nearly all the ills that nerves are heir to, and claims to remedy these ills by operating on the muscles. In fact, the external ocular muscles of hysterical patients are, in a large proportion of cases, not much better balanced than their minds, and, no doubt, decided results may sometimes be obtained by operating, at the same time, on both.

The most common form of this disturbance is insufficience of the internal recti, which frequently occurs independently of any error of refraction. When very decided in degree, it may easily be detected by directing the patient to look at some small object eight or ten inches from the eyes, and then holding the hand before one eye. The covered eye, thus relieved from the effect of binocular vision, will deviate outwards. In some cases the preponderance of action is with the internal recti, and in others no two examinations made in different days will give the same result.

A spasmodic contraction of one muscle is more rare. I reported the following well-marked case some years ago (*Transactions of the Phila. Col. of Physicians*, '76):

Miss M., a little below par in general health, and of extremely nervous temperament, complained that frequently, and without special exciting cause, as at the dinner table, or at the opera, everything suddenly appeared double, and at the same time it was evident to her that she had lost control of the movements of one eye, which felt as if forcibly turned to one side. On closing the lids and pressing the ball for an instant, the symptoms would disappear. The acuteness of vision was normal, the balance of the external muscles correct, and refraction nearly emmetropic. The correction of an hypermetropia of .75 D. did not prevent the recurrence of the annoyance. Two other patients have complained of occasional transitory diplopia; in one case horizontal, and in the other vertical. These patients occasioned much anxiety at the time—one ten years, and the other about six months ago—but I have seen both recently, and they are in good health. In this connection may be mentioned two curious cases of mon-ocular diplopia. In each the symptom persisted for several weeks, but was without physical cause, and disappeared without special treatment.

The case recently reported (*Med. News*) of hysterical mydriasis and paralysis of accommodation, occurring in one eye only, persisting for months, and finally relieved by mental impression, is, I believe, unique. There can be no suspicion of deception here, as there is no known mydriatic whose effects can be made to disappear so promptly and completely as these symptoms did.

Paresis or spasm of the accommodation is not unfrequent in neurotic subjects. The latter occurs usually, though by no means al-

ways, in connection with some error of refraction which acts as the exciting cause.

Retinal anæsthesia is a symptom which often occasions great annoyance to ophthalmic surgeons in testing refraction. Its subjects may at one moment have full acuity of vision, while at the next, with the same glass, it is very much diminished. They say that the letters become blurred and fade away after they have looked at them for a few seconds. The fact that this symptom persists under atropia shows that it is due, not to irregular action of the accommodation, but to exhaustion of the sensibility of the retina.

This condition of the retina makes the typical hysterical field of vision more restricted on the side that is recorded last in the testing. Such fields, the tracing and discussion of which have afforded much entertainment to the curious, are rarely found the same at any two examinations. A patient recently presented herself at the Polyclinic with complete horizontal hemianopsia of the right eye only. There was complete blindness below the horizontal line. As the ophthalmoscopic appearances were normal, I suspected hysteria. At her next visit the hemianopsia had disappeared from the right eye and appeared in the left, still in the lower half of the field, but with an irregular border. It was several times transferred from one eye to the other, each time with a more irregular outline, and after a few weeks disappeared entirely, leaving the field in both eyes quite normal.

I have met with several cases of colored vision—blue streaks, yellowish fogs, etc., of transitory character and evidently nervous origin.

Unsteadiness, or even apparent constant motion, of any object looked at, particularly print, occasionally occurs, and, not admitting of our physiological or optical explanation, may be classified as hysterical.

The most striking symptom, and the one that has naturally excited the most interest, is simulated blindness. For obvious reasons of expediency, this is usually monocular. At various times in the last ten or twelve years, I have reported four well-marked cases (*American Journal of Medical Sciences*, October, 1873; *Transactions of American Ophthalmological Society*, 1882 and 1884). Two were cured by exposure, and the others got well without ever knowing that they were suspected—possibly without having suspected themselves. One of them had a history of an attack of complete blindness, evidently of the same character, of both eyes, occurring some time previously; and another such case has been reported by Dr. D. H. Agnew (*American Journal of Medical Sciences*, October, 1873).

Various tests have been devised for the detection of simulated monocular blindness. The one most used has been Græfe's pressure test. If the patient can be made to admit double vision when a prism is held before the well eye, vision with both eyes is proved. A very simple test suggested by Warlamont may sometimes succeed, and, in his hands, has proved conclusive even as legal evidence. It displaces the axis of an eye by slight pressure upon the ball with the finger and shows the suspected person two small dots on a piece of paper. If he says there are four, he is at once convicted. It must be remembered that these tests do not show how much the eye can see, and do not even prove useful vision. This can sometimes be done by an equally simple test suggested by Javal. He causes the person to read while a ruler is held three or four inches from the face, and directly in front of the nose. As part of the print is concealed from each eye by the ruler it can be read continuously only by the use of both. An elegant but most difficult means of detection is afforded by the stereoscope (Schweigger, *N. Y. Med. Jour.*, Feb. 66). A test that has proved very satisfactory in my hands, is one that I first employed in a case reported in the *American Journal of Medical Sciences* for October, 1873. It consists in placing a strong convex lens before the well eye and requesting the patient to read prints held considerably beyond its focal distance. If he reads at all, he must read with the blind eye, as the lens used in this way excludes distinct vision from the other as effectually as an opaque screen. Suspicion is less apt to be excited if the trial frames are used with a glass of low power in the other side. This simple test not only establishes the fact of vision, but enables us to determine its degree; and even to measure the accommodation. Three of my patients were detected in this way; in one case, at least, after a careful trial of the prism test had completely failed.

When blindness of both eyes is simulated, we are, of course, deprived of any optical means of detecting it. Etherization, as suggested in an article on malingering by Drs. Mitchell, Morehouse and Keen (*American Journal of Medical Sciences*, Oct. 64) might prove successful. They found it so in deafness; and a case of hysterical deaf-dumbness was detected and cured in this way, some

years ago, by Dr. Hutchinson, at the Episcopal hospital.

These cases of hysterical blindness offer a curious and most interesting psychological problem. In some there is evidently a more or less deliberate deception, the result of an insane craving for sympathy or personal importance, or the motiveless freak of a disordered mind. Patients of this class are like the fasting girls who develope a superhuman ingenuity in the effort to make it appear that they live without eating. One of the patients referred to, after obstinately maintaining the deception for two years, abandoned it at once on detection. In the case of others, however, the charge of intentional deception can by no means so easily be maintained. Indeed a careful consideration of their other symptoms, their surroundings and their previous good character is almost enough to acquit them of acting a part. I have sometimes suspected that, though they read well enough unconsciously, they might not be capable of conscious vision with the affected eye; that there might be some mysterious derangement of the process of perception—a kind of negative hallucination, if such an expression could be allowed.

Though it is often a comfort, in doubtful cases, to remember that patients are not always what they seem, we cannot be too careful to avoid classifying a case as "nervous" until every possible organic change has been rigidly excluded, or supposing that we have nearly explained our patient's symptoms when we have called them hysterical. It is too often true that, as Charcot says, neuroses bear within them the germs of material lesions, and that a disease, apparently nervous, may at any moment become an organic disease.

The ophthalmic surgeon meets daily with patients whose symptoms not many years ago might well have been classified as hysterical, but which the deeper knowledge gained by the ophthalmoscope and optical tests now proves to have a substantial basis for their complaints. Doubtless, the limits of this convenient term will be still further restricted, in proportion as our knowledge of pathology expands and our means of accurate diagnosis are extended.

SOME RECENT MEDICO-LEGAL CASES.

Reported by Henry A. Riley, Esq., New York.

A CASE of a kind which is, fortunately, rare is reported in the last volume of Indiana Reports. It was that of a physician indicted for rape upon a female patient when making an examination of her person in reference to a supposed disease of the womb.

There was no evidence of consent on her part obtained through fraud or otherwise. The defendant was convicted of rape, and the court said in the course of an opinion: "The evidence tends to show that the appellant, as a physician, informed Rebecca and her mother that the former was suffering from a terrible womb disease, and was losing her mind. If the jury believe, as they might well have done under the evidence, that the appellant as a physician, obtained possession and control of Rebecca's person, under her mother's command, for the purpose of making a further examination of her alleged disease of the womb, and not for the purpose of sexual intercourse; and that she never in fact gave her consent, through fraud or otherwise, to the sexual connection, then it seems to us that the appellant was lawfully convicted of rape."

The compensation of nurses employed by public authorities is becoming an important one in view of the rapid increase of trained nurses and the great demand for their services.

A recent case in Michigan brought up the question whether the city must pay for such services when the nurses are employed by the common council by virtue of an ordinance requiring them to take measures for the preservation of public health, when at the same time there is a statute making patients of pecuniary means liable for such services. The patient in the case referred to seems to have been of ample means, and as the nurse was not paid the question was whether the city could also be sued. The nurse decided to bring suit against the city, and the court held that such a course was proper, notwithstanding the statute, and rendered judgment in her favor. The opinion is interesting and is in part as follows: "The duty to guard the public health and prevent the spread of contagion was imperative, and the power of the common council was commensurate with the duty. Neither the power nor the obligation could be lessened by the failure to designate a sub-agency. In providing that what is done shall be at the charge of individuals, it is not intended to exempt the public from immediate liability. It would be impossible under such a regulation to effectuate the general objects. Indi-

viduals would not be willing to provide necessaries and serve as nurses and assistants at the instance of the public if compelled to collect their pay of the patients or their relatives. The public is first and immediately responsible, and the intent of the statute is to enable the public to obtain reimbursement from those who ought to sustain the expense. The plaintiff hired herself to the city. She trusted the city and no one else. The occasion was a public one. It was an emergency to which the duty and authority of the common council attached under the power of police, and the right and duty to act depended in no manner on the pecuniary ability of the persons who were sick or infected. The great object was to stay the contagion, and the proper and humane care of the individuals was a righteous incident."

Negligence in the care of the sick is probably the most common of all charges against the physician which come before the courts for consideration, and the different states are not equally severe in requiring the knowledge and skill of the medical attendant to be of the highest order. In Germany, on the other hand, stringent rules are prescribed, as appears from a recent case where a patient suffering from a wound in the chest died under the care of a physician who did not believe in antiseptic dressings but used the old methods. The patient died from septicæmia, and, in a suit brought against the physician for negligence, judgment was rendered against him and the court said: "Every practitioner should keep himself informed on the accomplished progress of science and have an exact knowledge of modern systems of treatment. If these had been employed the patient's life might have been saved, hence the liability for negligence."

The ravages of Christmas candy among the young people is a noticeable feature of the season of enjoyment, and it is a matter of wonder that sickness is not more serious than it generally turns out to be. At all events, this is a good time to make it hot for the manufacturers of adulterated candies, and this has been done in New York city in a lively fashion. Dr. Cyrus Edson, of the Board of Health of that city, has been making an analysis of the candies manufactured by some sixty-four firms, and has found that those coming from thirteen houses were badly adulterated.

A wholesale seizure was then made of these candies, and some three tons were destroyed.

Some of the poisons used either in the manufacture of the candies or to color them, were the following: red-lead, chrome-green, Prussian blue, burnt umber, vermillion and fuchsine.

The Queen has just commuted the sentence of death passed upon Captain Dudley, of the yacht Mignonette, for the killing of the boy Parker, to six months imprisonment, without hard labor. The case has probably attracted as much attention as any recent trial, from the unusual circumstances surrounding the affair.

The facts of the case are briefly as follows: The English yacht Mignonette was on her way to Australia and foundered at sea in July last. The men on board were the captain, Dudley, the mate, Stephens, a seaman named Brooks, and a lad of seventeen, named Richard Parker. They found themselves in an open boat a thousand miles from land with no water and but two cans of turnips for food.

On the fifth day they caught a turtle, upon which they lived until the eleventh day, from which time until the eighteenth day they had nothing to eat and only a little rain-water to drink. On that day the captain and mate decided that the boy Parker should be killed on the next morning it there should be no vessel in sight. The boy was then lying prostrate in the bottom of the boat.

No vessel appeared on the horizon in the morning, and the captain killed the boy by cutting a vein in his throat. The seaman took no part in the killing, but the mate was an accessory before the fact.

The boy was very weak at the time and seemed almost dying, and probably in a short time would have succumbed. The others had families dependent upon them, while Parker was alone in the world. The captain says that when he decided to take the boy's life in order to save that of the others, he offered up a prayer that God would forgive him for the act. There was no attempt to conceal the killing, and as the survivors were not picked up for five days afterwards, it is altogether probable that all would have died had they waited for succor.

When the vessel arrived at Falmouth, England, the affair became known, and upon the captain's own statement of the facts he was arrested and held for murder. There was great interest felt in the trial and it was not considered probable that any jury would convict of murder in the first degree. The course

taken, however, permitted a sentence to be imposed for that crime. The jury were called upon to determine the facts, and this was an easy matter as there was no defence, and the question whether these facts constituted murder was reserved for the Court of Appeal.

This tribunal after careful examination has decided that the act was murder and not a case of necessity or justifiable homicide, and Lord Coleridge pronounced the verdict of death by hanging, but without the black cap, a special sign of disgrace. At the time he said that if the sentence seemed too harsh, recourse must be had to the Crown, and this prerogative of mercy has just been exercised by the commutation to the slight punishment of six months imprisonment.

There were happily but few cases on record of a similar character, and the Court had almost no precedents in reaching its conclusion. The only one mentioned, and that was disapproved of, was an American case, where Alexander Holmes was on trial for murder in Philadelphia in 1842. The emigrant ship, William Brown, was sunk by an iceberg off the Newfoundland coast, and the mate, eight seamen and thirty-two passengers were cast adrift in a leaky boat. When the danger seemed imminent of foundering, Alexander Holmes, one of the seamen, with some others, began to throw the passengers overboard. No lots were cast. The mate directed the crew not to part man and wife, and not to throw over any women. Sixteen passengers were flung into the sea, and early on the following morning the survivors were picked up. Holmes was tried for manslaughter, and was defended by the eloquent David Paul Brown, one of the leaders of the Philadelphia bar. He was found guilty, and sentenced to six months' imprisonment and to pay a fine of $20. Judge Baldwin held that between a sailor and a passenger the sailor was bound to protect the latter, and said in his charge, "When all sustenance is exhausted, and a sacrifice of one person is necessary to appease the hunger of others, the selection is by lot. This mode is resorted to as the fairest mode, and, in some sort, as an appeal to God for selection of the victim."

Baron Huddlestone, who tried the case of Captain Dudley, did not agree with this reasoning, and said it seemed to verge almost upon the blasphemous. In his opinion, if the boy Parker had been possessed of a revolver, he would have been perfectly justified in killing the captain, who was about to kill him, thus showing clearly that the act of the captain was unjustifiable.

There will be many comments upon the case, but the Queen's clemency will certainly be thought to be wisely exercised. The trial does not seem to have brought out all the circumstances mitigating the crime as it might have done, and but little stress was laid upon the fact that exposure in an open boat for about three weeks, with almost nothing to eat and without water for some days, might naturally cause such a condition of mind and brain as to relieve a person from responsibility for his acts. At the same time it would never be safe to have it understood that the law was in the hands of any brutal sailor on the open sea on a raft, and that he could take life, to save his own, with impunity. The general verdict will be that the result of the trial and the Queen's action also were both right.

HYDROBROMATE OF HYOSCINE AS A HYPNOTIC IN INSANITY.

By H. C. Wood, M. D.

SINCE my article on Hyoscine, published in the January number of the Therapeutic Gazette went to press, my election as consulting physician to the Philadelphia Institute for the Insane, where there are between six and seven hundred patients, has afforded an opportunity for enlarged clinical trial of the drug. The following is the report made to me by Dr. Chas. P. Henry, assistant physician in charge of the male department. He says:

"If there be any symptom which more than another, is characteristic and important in insanity, I conceive that sleeplessness is such. The broadest of therapeutic indications for an injured member, or organ, is rest. And, as the brain is considered to be the peccant organ in this class of diseases, surely its first requisite is sleep, which is its mode of rest. Any drug, therefore, which is a genuine addition to our soporific armamentarium must be of interest to the medical man charged with the treatment of brain disorders. Opium in its various forms, cannabis indica, chloral hydrate, potassium bromide, *et id omne genus*, have all of them their special and well-recognized values, but there is a large vacant spot which can alone be filled by the valuable drug under consideration. Chloral and the bromides are bulky and offensive to the taste, and many a lunatic will refuse to taste them.

Morphine, from its readiness of hypodermic use, is serviceable, but is very often contra-indicated; and, besides, the resistance, on the part of the patient, whilst the injection is being given, is very objectionable. For all such cases, hyoscine is of extreme value. Its minute dose, its tastelessness, make it capable of admixture with palatable articles of food or drink which would be taken by any patient, except, of course, one who was starving himself. And, for such, it can be injected beneath the skin perhaps more readily and with better results than can morphine.

In nearly all the cases in which I have used it, its efficacy has been clear. Besides occasionally employing it by the mouth, I have used it by this method continuously in the following two cases with marked benefit: one was a case of sub-acute mania, the other, one of acute melancholia. Both absolutely refused to take medicine; and the expedient I adopted was to add the narcotic to a little whisky-and-water, given them at bed-time as a "night-cap," which they took readily. The former, John Lloyd, had regularly made night hideous with his ceaseless yelling, stamping on the floor, pounding his door, ripping out the plaster, destroying his clothing, etc. The administration of $\frac{1}{12}$ gr., by the mouth, had some little effect, quieting him for an hour or so; but, on the dose being increased to $\frac{1}{48}$ gr., he slept regularly (and has continued doing so) an average of six hours continuously. In the day-time, too, his excitement has notably diminished.

The second case was that of Hugh Stewart, who suffered from delusions of persecution, horrible hallucinations, sleeplessness, etc., and who refused to take medicine. He readily drank, however, his whisky-and-water with $\frac{1}{48}$ grain of the salt, sleeping in consequence the greater part of the night, and awaking much refreshed, with his psychalgia wonderfully mitigated. In the other cases in which I have used it, the hypodermic method was resorted to; and in these the results were very striking. Two were cases of acute, destructive mania. The injection of $\frac{1}{96}$ gr., produced drowsiness in from forty to fifty minutes, and sleep of a sound and natural character in one and a half to two hours, lasting from five to seven hours, and succeeded by a drowsy stage. Numerous trials in these cases continued to yield the same results, along with a decided abatement, next day, of the excitement. Similar results were attained, in a few trials, in two cases of melancholia. In one case of destructive dementia, the specific effect of the salt, injected in the same dose ($\frac{1}{96}$ gr.) was but slight, it producing instead, in six trials, great muscular lassitude. Whether by a mere coincidence, or by some casual relation, the patient's destructive propensity in great part disappeared. In one case of destructive idiocy, the injection of $\frac{1}{96}$ gr. had no appreciable effect after several trials. Later, $\frac{1}{72}$ was used, with the effect of producing trifling drowsiness, with anorexia. Finally, $\frac{1}{48}$ gr. was injected, this causing drowsiness in half-an-hour, and profound sleep after seventy minutes, lasting for six hours.

As to the other constitutional effects of the drug, the experiments show diverse results. No marked depression of the pulse rate was noted, except in one case of acute, mischievous mania, in which the injection of $\frac{1}{96}$ gr., besides producing profound sleep, lowered the pulse from 84 to 48 in two hours' time. The extremities became quite cold, and the circulation feeble. The pupils were also moderately dilated. The respirations fell from 22 to 18.

In all these cases the effects of the drug on the pupil were carefully looked for, but with negative results, in nearly all. In three cases, however, some dilatation was remarked, but very little impairment of contractility. The temperatures were tested, and found to be unaffected.

It should be added that, up to the present, no bad result of any kind has been observed to follow the use of the drug, which would, therefore, appear to be as safe and trustworthy as it is efficacious and powerful."

It is very important to know the relations between atropia, hyoscyamia, and hyoscine. It is perfectly plain that the last two are entirely different from one another, and that hyoscine is essentially different from atropia. Studies which I have myself made, but not completed, upon hyoscyamia, indicate that it is a substance having its own individuality, is not atropia, and does not resemble it. At least this is true of the Merck's crystallized hyoscyamia as supplied to the market; yet Professor Sydney Ringer, in a careful comparative study made by him upon a case of acute mania, found that atropia and hyoscine had practically the same effect in producing sleep. In one of my cases of chronic mania, in which, as consultant, I advised hyoscine, the gentleman gave hyoscyamia, and was so satisfied with the result that I could not get him to use hyoscine. On the other hand, in a hospital case under my own care, hyoscyamia failed

entirely to produce sleep or quiet, while hyoscine acted most happily. The following note is a report from Dr. Geo. E. Day in regard to the use of hyoscyamia upon a few patients, most of them suffering from diseases indifferent from the remedy. The alkaloid was procured by myself, and was Merck's in original package. The account of Dr. Day shows, certainly, that this so-called hyoscyamia is entirely distinct from atropia, and very much less powerful than it or hyoscine. Dr. Day writes: "I used $\frac{1}{100}$ gr. on four patients without any effect whatever; also $\frac{1}{60}$ gr. without enough change in pulse, respiration, sensation, etc., to decide whether there was any due to the drug. I afterward used $\frac{1}{30}$ gr. on four patients hypodermically, and got no result further than some change in the pulse, varying from five to fifteen beats in the minute, and one or two respiratory acts over normal. There was no change in sensation whatever, nor were there any subjective symptoms manifested by the patients. I afterward employed $\frac{1}{20}$ gr. hypodermically upon one patient, and repeated it in a half hour. I was called away from the patient, so I could not ascertain if there was any changes in pulse and respiration. The patient, however, told me that he merely felt slightly drowsy, it being in the evening. He experienced no marked symptoms from this $\frac{1}{10}$ gr. given in two doses. I tested its effect upon the cornea and conjunctiva, and found that it had no anæsthetic effect, although it readily dilated the pupil."

COCAINE.

By L. E. Sayre, Ph. G.*

IN THESE latter days of keen thought and rapid action, the wheel of progress revolves so swiftly that a new subject is scarcely born before it is old, such multitudes are drawn into the field of investigation that literature is voluminous with reports, and the subject is forthwith apparently exhausted. It has been but a few months since the announcement was made that the hitherto almost unobserved alkaloid—cocaine—had peculiar properties which for a long time had been sought after in vain in the vast realm of therapeutic agents. Now it is as if it were a fact of the past. The local anæsthetic properties of this alkaloid are established by the testimony of thousands. So much has been written upon it that it seems impossible to add anything new, or to say anything that is not most generally known upon the subject. It may be, however, entertaining and instructive to review very briefly a few interesting points gleaned from the literature of the day connected with the plant from which this drug is obtained, the alkaloid itself, and its peculiar properties. In a recent reprint of an article written by C. R. Markham, 1881, by the *American Druggist*, it is stated that the coca plant (erythroxylon coca) is cultivated between 5,000 and 6,000 feet above the level of the sea, in the warm valleys of the eastern slopes of the Andes, where almost the only variation of climate is from wet to dry, where frost is unknown, and where it rains more or less every month in the year. It is a shrub from four to six feet high, branches straight and alternate, leaves in form and size like tea-leaves, flowers with a small, yellowish-white corolla, ten stamens and three pistils.

In raising the plant from the seed, the sowing is commenced in December and January, when the rain begins and continues until April. The seeds are spread on the surface of the soil in a small nursery or raising ground, over which there is generally a thatch roof. At the end of about a fortnight they come up, the young plants being continually watered and protected from the sun. At the end of eighteen months the plants yield their first harvest, and continue to yield for upwards of forty years. The first harvest the leaves are picked very carefully, one by one, to avoid disturbing the roots of the young, tender plants. Gathering takes place three times and even four times in the year. The most abundant harvest takes place in March, immediately after the rains. With plenty of watering, forty days suffice to cover the plants with leaves afresh. It is necessary to weed the ground very carefully, especially while plants are young, and the harvest is gathered by women and children. The greatest care is required in the drying of the leaves; for too much sun causes them to dry up and lose their flavor, while if packed up moist they become fœtid. They are generally exposed to the sun in thin layers. Acosta says that in his time the trade in coca at Potosi was worth $500,000 annually, and that in 1583 the Indians consumed 100,000 cestos of coca, worth $2.50 each in Guzco, and $4.00 in Potosi. In 1591 an excise of 5 per cent. was imposed on coca, and in the years 1746 and 1750 this duty yielded $800 and $500 respectively from

* Read before the Philadelphia College of Pharmacy, Jan. 13, '85.

Caravaya alone. Between 1785 and 1795 the coca traffic was calculated at $1,207,430 in the Peruvian viceroyalty, and including that of Buenos Ayres, $2,641,478.

The coca trade is a government monopoly in Bolivia, the State reserving the right of purchasing from the grower, and re-selling to the consumer. This right is generally farmed out to the highest bidder. In 1850 the coca duty yielded $200,000 to the Bolivian revenue.

The approximate annual produce of coca in Peru is about 15,000,000 lbs., the average yield being about 800 lbs. an acre. More than 10,000,000 lbs. are produced annually in Bolivia, so that the annual yield of coca throughout South America, including Peru, Bolivia, Ecuador, and Pasto, may be estimated at more than 30,000,000 lbs. The reliance on the extraordinary virtues of the the coca-leaf amongst the Peruvian Indians is so strong that in the Huanuco province they believe that if a dying man can taste a leaf placed on his tongue, it is a sure sign of his future happiness.

In speaking of the strength the coca gives to those who chew it, a writer relates the following anecdote: "I remember a story which I heard in my native land of Peru, of a gentleman of rank and honor, named Rodrigo Pantoja, who, travelling from Cuzco to Rimac (Lima), met a poor Spaniard who was going on foot with a little girl, aged two years, on his back. The man was known to Pantoja, and they thus converse: 'Why do you go laden thus?' said the knight. The poor man answered that he was unable to hire an Indian to carry the child, and for that reason he carried it himself. While he spoke, Pantoja looked in his mouth and saw that it was full of coca, and as Spaniards abominate all that the Indians eat and drink, as though it savored of idolatry, particularly the chewing of coca, which seems to them a low and vile habit, he said: 'It may be as you say, but why do you eat coca like an Indian, a thing so hateful to Spaniards?' The man answered: 'In truth, my lord, I detest it as much as anyone, but necessity obliges me to imitate the Indians and keep coca in my mouth, for I would have you to know that if I did not do so, I could not carry this burden, while the coca gives me sufficient strength to endure the fatigue.' Pantoja was astonished to hear this, and told the story wherever he went, and from that time credit was given to the Indians for using coca from necessity, and not from vicious gluttony."

That coca actually can allay hunger for a considerable time is well known, and there is even a case on record where a number of miners had been buried alive in a South American mine, and kept themselves alive, without food or drink, for twelve days with their usual supply of coca. The action of coca and cocaine, to repress the sensation of hunger, is no doubt partly (or mainly) due to the physiological effect which the drug exerts upon the mucous membrane of the stomach and intestines. Through the repression of circulation in the mucous membrane of the stomach (and accompanying repression of the gastric juice), the process of assimilation is temporarily suspended, and cravings of hunger suppressed until the effects of the drug wear off. If ever a remedy, on purely theoretical grounds, held out any hopes of being serviceable in sea-sickness, it seems to us that cocaine is one of these. At all events, it will be worth while to try its effects.

Since Dr. Koller, of Vienna, the discoverer, publicly exhibited his experiments proving the efficiency of cocaine as a local anæsthetic, all countries have taken the matter up, and, as a rule, great enthusiasm prevails; and, notwithstanding the slight adverse testimony of a few, it is justly predicted for this alkaloid a speedy and general use not only in ophthalmological practice (for operations, etc.) but for operations and treatment of all mucous surfaces.

E. Merck, of Darmstadt, in a recent circular, reports on the internal administration of the alkaloid. It has, he states, a very exhilarating effect upon the nervous centres; the effect of the drug does not seem to be cumulative. It is an admirable restorative from the exhaustion of diarrhœa. Subsequently excellent results have been obtained in curing the morphia habit. Dr. Freud, of the Vienna General Hospital, reports a case of this cured in 10 days. His theory is that morphine and cocaine are antagonistic.

According to the experiments collected by Merck, the therapeutical value of cocaine may be thus described: Cocaine is a stimulant which quickly increases and serves to sustain, in a harmless manner, the physical powers of the body; it is much more strengthening than alcohol—hence its value on all occasions of extraordinary bodily exertion—in doses of 0.05 grm. at intervals. Whether the powers of the mind can likewise be increased and strengthened is still unknown, as also whether the activity of the nerve centres can be permanently increased.

Some good results have been obtained in the treatment of melancholia by the subcutaneous method. It is valuable as a stomachic, particularly after a debauch in eating and drinking. It is credited with the permanent cure of atonic indigestion. The various exhausting fevers, mercurial poisoning, etc., are said to be averted by its use. It is reported from several authorities in this city that when a solution of cocaine is applied to the nasal passages, the venous sinuses below the mucous membrane become, within twenty or thirty seconds, so rigidly contracted as to expel all the blood contained in them and to cause the membrane to cling closely to the bony structure, which then becomes sharply outlined. In acute coryza, cold in the head, the discomfort from fullness and difficult breathing is almost at once removed. Dr. F. H. Bosworth, of New York, suggests the use of cocaine in hay fever.

Cocaine citras is used by dentists to anæsthetize the dental nerves. Merck states that this salt can be readily kneaded into pills, which may be wrapped in wadding, moistened and placed in the hollow of the tooth, when, lo! the tooth can be cleaned and filled without pain. If this be true, the man who discovered it is worthy of a high place among the benefactors of the race.

I am informed that an article will appear in the Jan., 1885, number of the THERAPEUTIC GAZETTE by Dr. Keyser reporting several cases showing the untoward effects from hydrochlorate of cocaine in his hands, and also in the hands of several of his colleagues in the ophthalmic line, including the well known oculist, Dr. Strawbridge. These cases reported by a single authority should be carefully studied. One swallow does not make a summer, neither do five, and when so much evidence has accumulated in favor of the drug, it will not do to condemn it without much more evidence against it. A drug which has done so much good must have good qualities, and if it prove to have bad qualities also, cannot the same be said with equal truth concerning opium, quinine, and other standard medicines? What we want to know now is the rationale of its action so that we may find out its intelligent use, and while we believe in the conservative side in all matters, let not our conservatism drift into inertia. Prove all things and hold fast to that which is good should be our motto.

With regard to the physiological action of hydrochlorate of cocaine, there is some reason for thinking that it first contracts the blood-vessels and blanches the tissues. This is followed, at least in some cases, by a period of reaction and corresponding dilatation of the vessels, and sometimes by severe pain lasting for a period of fifteen or twenty minutes, more or less.

As to the preparations of the alkaloid, Niemann prepared cocaine by exhausting coca leaves with eighty-five-per-cent. alcohol, containing one-fiftieth of sulphuric acid, supersaturating the alcoholic solution with lime, then neutralizing, carefully, with diluted sulphuric acid, separating the precipitated sulphate of calcium, and distilling off the alcohol. The residuary fluid is supersaturated with soda and then shaken repeatedly with ether which dissolves out the cocaine. On evaporating the ethereal solution, cocaine remains behind in an amorphous condition, but soon becomes crystalline. It is somewhat purified by washing with a little strong alcohol, and then recrystallized from highly dilute alcohol.

Lossen extracts coca leaves with rain-water, precipitates with acetate of lead, removes the excess of the latter remaining in solution by means of sodium sulphate, filters and adds soda to the filtrate in slight excess. On shaking this mixture with ether, only cocaine passes into solution, while *hygrin* remains in the alkaline liquid. The crude cocaine obtained after the evaporation of the ether is dissolved in very dilute hydrochloric acid, and this solution dialyzed, the cocaine passing through parchment paper, while most of the accompanying coloring matter remains behind. From the dialyzed acid solution the alkaloid is then precipitated with soda, and obtained pure by several times recrystallizing it from alcohol.

Lossen obtained, in the most favorable case, 4 parts per 1,000, and from poor material 1.6 parts per 1,000. Cocaine crystallizes in four or six-sided monoclinic prisms. It is soluble at 12° C. in 704 parts of water; easily soluble in alcohol, and still more so in ether. It melts near 92°. From a dilute aqueous solution of hydrochlorate of cocaine, the alkaloid is precipitated by caustic alkalies, and their carbonates, also by ammonia and ammonium carbonate, though the latter causes a considerable portion to be retained in solution. Bicarbonate of sodium and potassium yield a precipitate only in its concentrated solution. Sulphocyanide of potassium renders its solution but slightly turbid. So also tannic acid, provided free hydrochloric acid is present. Stannous chloride causes a

white precipitate soluble in much nitric acid; mecuric chloride, a copious precipitate, rapidly becoming flocculent, soluble in alcohol and hydrochloric acid; picric acid, a purulent yellow precipitate, soon becoming resinous; phosphomolybdic acid, a yellowish-white flocculent precipitate; iodine water, or iodized iodide of potassium, a kermes-brown precipitate.

Dilute acids do not alter cocaine, but concentrated acids (sulphuric, etc.,) change it into ecgonin, benzoic acid, and methyl alcohol, or rather the ether of the latter. Ecgonin is a product of the decomposition of cocaine, and not a natural constituent of coca leaves. Merck states that he hopes to be able, ere long, to report on the physiological action of ecgonin.

It may be that we are on the road to a better knowledge of this important and valuable drug. My own feeling in regard to the matter is that we have just discovered that it has these properties of local anæsthesia, and in this line there is no doubt we shall have other substances which will have the same properties.

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*NOTES ON THE TREATMENT OF EPILEPSY.**

By Charles K. Mills, M. D.†

MY remarks in this paper, which I will make as condensed as possible, will be applied chiefly to the medicinal treatment of epilepsy proper—grand mal and petit mal—and I do not intend at present to refer to the treatment of convulsive seizures due to tumors, meningitis, spinal disease, etc.

As to the curability of epilepsy, some apparently authentic cases of cure are on record, but after looking over the subject, I can only recall seven cases of apparent or real cure in genuine epileptic cases in my own practice, private and hospital, though there may have been others of which I have no memoranda. In all of these the attacks remained away for from more than one to more than three years. Gowers mentions a number of cures, at least cases in which seizures had not recurred for as much as four, five, six, or seven years. Several of these were children, three of my seven cases were children. All observations as to the cure of epilepsy are necessarily imperfect, since after a number of years the attacks are apt to recur again. Although, however, the absolute curability of epilepsy might be doubtful, certainly great benefit is to be derived from treatment in most cases. It is a wrong to such patients not to treat them.

I have used the following remedies, singly, in the doses mentioned, and usually three or four times daily, in a series of cases, during the last ten years: Bromide of potassium, grs. x to ʒ j; bromide of sodium, grs. x to ʒ j; bromide of ammonium, grs. x to ʒ ss; mono-bromide of camphor, grs. iij to vj; hydrobromic acid, f ʒ ss to f ʒ ss; iodide of potassium, grs. v to ʒ ss; biborate of sodium, grs. xv to xx; chloral hydrate, grs. x to xv; oxide of zinc and valerianate of zinc, grs. iij to x; nitrate of silver, gr. ¼ to gr. ½; tincture of belladonna, ♏x to xv, or extract belladonna, gr. ¼ to gr. ½; extract of cannabis indica, gr. ⅛ to gr. ¼; fluid extract of cocculus indicus, ♏j to iij, or tincture of cocculus indicus, ♏v to x; nitrate of potassium, grs. v. to viij. Other remedies which I have only used in combination with some of the above drugs, are as follows: Conium juice, f ʒ j, or fluid extract, ♏iij to x; tincture of digitalis, ♏v to x; sulphate of strychnine, gr. $\frac{1}{40}$ to $\frac{1}{30}$; Fowler's solution of arsenic, ♏ij to v; fluid extract of ergot, f ʒ j to f ʒ ij, or extract of ergot (Squibb's), grs. iij to xj; iron, cod-liver oil and quinine.

The bromides are certainly the best remedies, and the bromide of potassium, in my opinion, stands at the head of the list. The bromide of sodium comes next best to the bromide of potassium, the mixed bromides being better, usually, than any one of them used singly.

The bromides can be advantageously combined with other drugs. The combination which I have found, on the whole, the best for long continued use, is bromide of potassium, grs. xv; bromide of sodium, grs. xv; solution of the arsenite of potassium (Fowler's solution), ♏ij; conium juice, f ʒ ss, or the fluid extract of conium, ♏iij to v. This may be made up with syrup of orange, and some bitter infusion. Another good combination, mentioned also by Gow-

*Read before the Philadelphia Neurological Society.

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ers, is the bromide of potassium and tincture of digitalis, though it is only especially valuable in cases complicated with weak heart or mitral disease. Mono-bromide of camphor has no advantages over the other bromides. Hydro-bromic acid is efficient in very large doses, but sometimes irritates the stomach; and so much water has to be given with it that the amount to be swallowed is simply enormous. Borax is not of established value. I have found the iodide of potassium, unless especially indicated by syphilis, of little value when used alone in the treatment of epilepsy. Chloral hydrate is not of value when given alone, but with the bromides, in cases uncomplicated with cardiac disease, sometimes makes a useful combination. I have also used Trousseau's belladonna treatment, but without noteworthy success. Cannabis indica is not to be relied upon. I have tried cocculus indicus in six cases at the Philadelphia Hospital. None improved, and four were made worse by its use, one of the four becoming insane while taking the drug. At the request of Drs. Reichert and Hinsdale, I have used the nitrite of potassium in seven cases. Of these, only one seemed to be temporarily benefited, and some were made worse by its use. When the bromides had to be stopped, the zinc salts and the nitrate of silver, are the best substitutes; but they can only be relied on for a short time.

The way to treat epilepsy medically is to simply have a plan of treatment, and carry it out over a series of months or years. I would, for instance, first put a patient upon a single bromide, say ten or fifteen grains three times a day, to be increased until a decrease in the number and severity of the paroxysms was produced. I would keep him upon this perhaps for a month, and then use the mixed bromides, or some combination of bromides with other drugs, preferably the bromides, arsenic and conium prescription, watching the condition of the patient, and, if necessary, putting him on cod-liver oil, quinine and iron. With reference to nitrates, bromates, etc., there is probably some chemical or chemico-physiological reason for their inefficiency. The *ites* and *ates* would probably *never* give as good results as the *ides*. I further agree with Dr. Pepper (*Medical and Surgical Reporter*, January 12, 1884) that close attention should be paid to every point in the daily life of an epileptic—to diet, regimen, rest, and hygiene; but I do not, with my present experience, believe that a genuine case of thoroughly-developed epilepsy can be cured, or even greatly benefited without drugs.

Among the surgical and external means of treatment which I have successfully used are excision of cicatrix, removal of neuroma, actual cautery, and blistering to the neck or head. I do not use counter-irritation to the scalp, but am a strong believer in the actual cautery, used after Brown-Sequard's method, to the nape of the neck. The subject of trephining I hope to consider at another time.

NOTES ON A CASE OF SUDDEN APOPLECTIC DEATH. HÆMORRHAGE INTO THE FOURTH VENTRICLE.

Reported by Dr. Geo. E. Day.

THE following case seems worthy of brief record as an instance of sudden apoplectic death. It occurred in the Philadelphia Hospital, in the service of Prof. H. C. Wood, by whom a diagnosis of the case was made after death, but before the performance of an autopsy.

Benjamin Murray, colored, aged fifty, while walking in the grounds of the hospital, suddenly staggered, and uttering two or three cries of distress, fell to the ground in an unconscious condition. There was noticed some little twitching of the face at that time.

He was removed to one of the out-buildings, and about fifteen minutes later was seen by a resident doctor, who found him in a comatose state, with stertorous respiration and a moderately full pulse. The pupils were then about normal and equal.

He was then taken to the nervous ward, and when I saw him, which was about thirty minutes after he fell, he was drawing his two or three last breaths.

I could not distinguish any pulse nor hear the heart sounds.

The right pupil was then quite widely dilated, and the left one about normal.

The autopsy held by the coroner's physician revealed large hæmorrhage into the fourth ventricle. The ventricle being full of partially coagulated blood.

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Leading Articles.

NOTES ON THE TREATMENT OF BRONCHITIS IN YOUNG CHILDREN.

For the purposes of the therapeutist the serious lung inflammations of young children may be considered almost as one disease. The same general rules of treatment apply to each of them. Depletion is usually not well borne, but in robust children leeching is sometimes of service in the onset of the attack, and is distinctly less dangerous than the free use of antimonials, veratrum viride, and other equally powerful depressants.

I am inclined to believe that the jacket-poultice is of more value than medicines, but of course its use does not preclude internal treatment. It should be made by cutting a piece of heavy flannel into a parallelogram of such size and shape as when doubled and sewed into a sort of bag, to completely envelope the chest. Tapes may be sewed on the ends and top so as to be tied in front and also over the arms. I have sometimes secured the poultice successfully in restless children by pinning it with safety-pins to the undershirt. Immediately outside of the poultice should be placed oiled silk or muslin, and care should be used that the poultice be not so wet as to drip. The best material for filling is flax-seed meal, to every four tablespoonfuls of which one or two teaspoonfuls of mustard flour may in most cases be added with advantage. The frequency of change of the poultice varies with the case. When there is fever the heat of the poultice is kept up by the high temperature of the body, so that it may be left on for twelve, or even more hours, unchanged. To prevent falling of the contents to the bottom, it is often well to divide the poultice bag, by a longitudinal row of stitches, into two compartments which are to be filled from one end. After the poultice, or at any time when during its prolonged use the skin threatens to become sore, cotton or woolen batting may be applied to the chest, and when it is covered with oiled silk, it often becomes so damp as to act almost as a poultice. When there is a marked tendency to nervous collapse, the garlic poultice is almost invaluable. It should be made out of not too old garlic. The cloves should be thoroughly crushed and mixed with about their own bulk of flax-seed meal. As it is very desirable to favor absorption of the oil, the poultice mass should be in immediate contact with the skin.

In regard to medication, the citrate of potassium mixture spoken of in the January number of this journal, is often of great service in the beginning of the disease. It acts, however, on very young children, as a distinct depressant, and must not be used for too long a time. It is not intended here to discuss in detail the use of the ordinary expectorants. The first note on the subject that seems necessary, is that when the ammonia salts are used, they must be given at very short intervals, as the action of the individual dose is a very brief one. In the advanced stages of the disease, an old-fashioned, but very valuable remedy is syrup of garlic, and when the stomach will bear it, the oil of eucalyptus is often of great value; when there is a marked tendency to adynamia, the oil of turpentine sometimes acts most happily. It is very important for the physician to remember that in pneumonia the direct action of medicines upon the disease is very slight, and that the life of the patient may depend upon the physician having nerve enough to withdraw all drugs, except such as can be given by the rectum, at a time when the symptoms are most alarming.

When there is a tendency to weakness stimulants are very well borne by children, including under this term milk-punch and other alcoholic foods, as well as digitalis. When the digestion fails artificially digested foods,

such as pancreatized milk, are often of the utmost service.

There can be no doubt of the value of quinine in a disease of the present class. It is also certain that it is well borne by children; but some caution is necessary in its use, as harm has seemed to me to have been done by the doses I have seen given by some practitioners. Three grains a day ought to be the maximum dose for a child one year old, not suffering from a malarial affection.

The present article, however, was written especially to call attention to a mode of treatment of the so-called *suffocative bronchitis*, which I originated many years since, and have, as occasion offered, used with great satisfaction. It must be understood that this method is only to be employed in desperate cases, when death appears to be very rapidly approaching. It is, of course, well known that occasionally in young children the mucous exudate so collects in the lungs as to seriously impair the interchange between the gases of the blood and the air. Under these circumstances there is gradually an accumulation of carbonic acid in the blood, and a consequent progressive asphyxia and benumbing of the nervous system.

It is very important that we should understand that in most cases of narcotic poisoning, or other affections in which respiration is interfered with in any manner, the accumulated carbonic acid plays a very important rôle in the progress towards death. I have, myself, in a number of cases, taken a dog practically dead from a respiratory poison, pumped fresh air in and out of the lungs for a few minutes until consciousness returned, and seen the animal recover. In Schiff's laboratory, in Geneva, very frequently after extirpation of its thyroid gland the dying animal was restored to consciousness by artificial respiration, and lived for several days, until the reaccumulated carbonic acid put an end to its life. In a child suffering from suffocative catarrh, there is a similar accumulation in the blood, until at last the child may be said to be suffering from a narcotic poisoning as well as from impeded bronchial tubes. The respiratory centres feel less and less the demands upon them; the muscular fibres of the bronchial tubes, as well as the respiratory muscles themselves, little by little weaken, and so at last the life is put out. Under these circumstances, if from time to time it be possible to pump out from the blood the accumulated carbonic acid, life may be kept going until a favorable turn in the disease occurs.

Many years ago, my oldest child, at that time under two years of age, was dying of suffocative catarrh, under the care of two of our most famous medical practitioners. He had been vomited, stimulated, poulticed, etc., according to our utmost skill, but had gradually grown worse, until he was completely comatose, and had not been able to swallow for several hours. Our consultant, Dr., now Prof. DaCosta, informed us, what I of course felt, that nothing more could be done. The medical gentlemen left, and we gathered about the little one to watch his last breath. Suddenly the child made a struggle as he lay upon his mother's lap. The exclamation was heard at once, "he is going." I said "no, he is making a little effort to cough," and then the plan of treatment about to be spoken of presented itself to my mind. Two children's bath tubs were immediately prepared, one containing water of over a hundred and twenty degrees, much hotter than the hand could bear; in the second tub the water was flowing from melting ice.

Not heeding the numerous entreaties to let the child die in peace, I tore off the clothes, held the limp, unconscious body over a tub, and dashed a large ladlefull of the hot water over the chest, following it by one of the cold water as rapidly as possible. The result was, as I had expected, an immediate catching of the breath or violent gasping inspiration.

Everyone knows that sudden douches of cold water over the bared chest have a very powerful effect in producing an inspiratory effort. The object of the hot water was to prevent chilling of the body, and also, by contrast to intensify this effect of the cold water. It has been from time immemorial the custom of certain nations to rush from the hot steam vapor bath and plunge into the cold snow, and contrary to what many of us formerly believed there can be no doubt that instead of the previous heating increasing the danger from a cold exposure, it lessens such danger, unless the exposure be too long. The body being somewhat overheated and the contact of the cold but momentary, there is but a superficial effect, and the outside chill of the skin is followed at once by reaction.

To return from this digression to our case. At the first involuntary inspiratory struggle, the dying child drew a little air through the occluding mucus into the pulmonic air vesicles. A rapid repetition of the alternate hot and cold douche, with the successive portions

of air inhaled by the repeated gasps expelled for the time being much of the accumulated carbonic acid from the blood; when this process had gone on sufficiently it was aided by tickling the nostrils with a feather, ammoniacal inhalations and, until at last, marked signs of life emerging from the narcotism were visible. The child was then dropped momentarily into the bath tub of semi-scalding water. The instant the skin touched the hot liquid it was flushed all over, and the child, now capable of feeling, screamed with pain. The violent respiratory struggles of yelling of course drew more air into the lungs, and the life of the child was for the time being saved. When the attending physician came back two or three hours subsequently, to pay a visit of condolence to its bereaved parents, the child was sitting up and talking freely. It soon, however, began to relapse into its former condition, and for some thirty-six hours it was necessary at intervals to repeat in a somewhat milder form the treatment just described. Under the use of stimulants and other appropriate remedies the disease gradually subsided and the child finally recovered its health. I have used this apparently heroic treatment on as young an infant as five months, and have seen it on each occasion on which I have employed it save life. Of course it is, as already stated, only to be practiced in desperate instances, always in a well-warmed room, and is only adapted to a certain class of cases, but with no other remedy have I ever had such a sense of personal victory in the struggle when the stake is a human life.

THE TREATMENT OF CHOLERA.

WHETHER we believe or not the views as to the spread of cholera advanced in that powerful fiction "The Wandering Jew," there is enough probability in the appearance of cholera among us next summer to render very acceptable any information as to the best means of preventing or treating this dread disease. Unfortunately we cannot yet use the word "cure" in this connection, for, in spite of the innumerable articles on the treatment of cholera with which journals in all tongues have for the last half year been overflowing, no cure has yet been found. The occasion is a timely one, however, for passing in review those articles of the materia medica and the hygienic methods which recent experience seem to prove worthy of the greatest reliance.

As purely empirical treatment of symptoms can seldom be relied upon to furnish any reliable therapeutic measure in this, as in nearly all diseases, we cannot hope to discover a specific for cholera, save by the purest accident, unless we have some precise notions as to its etiology, and unfortunately this is a point in which absolute knowledge is wanting. We do not here propose to discuss the etiological relationship between this disease and the bacillus discovered by Koch, and believed by him and by a large and important number of the profession, to be the cause of cholera. There are two points, however, which the controversy on this subject have served to make tolerably clear: that this germ is found in the intestinal contents and evacuations of cholera patients, and the best methods of prophylaxis depend upon its destruction in those dejecta; and in the second place, that we are absolutely ignorant of any means which will prevent the growth of this germ in the human system. To be sure, Koch has found out that sulphate of copper in a dilution of one part to 25,000 will prevent their development, but then he has also shown that a sufficient quantity of copper to prevent the growth of this bacillus in the intestinal canal of a case of cholera would inevitably kill the patient.

If then, there is as yet no specific known against cholera, we are reduced to a symptomatic treatment of indications, and, with the exception of increased knowledge gained by extended experience, are but little better off than our predecessors of a former generation.

In the formation of a general opinion as to the value of the different measures in the combating of this disease, no attempt will be made to consider all or even a majority of the various plans, which, according to their authors, have been followed by more or less success; this has been, to a certain extent, done by DR. RICKLIN in an elaborate review in the *Gazette Médicale de Paris*, Nos. 47, 48 and 49, 1884, and the long list of measures which he there details, we propose to reduce still further.

Without considering cases which are almost at once fatal, an attack of cholera may, for the sake of convenience in indicating the appropriate treatment, be divided into three stages. Prodromes may be said to exist when the attack commences with what has been termed premonitory diarrhœa, accompanied by other manifestations of gastro-intestinal distress, such as nausea, vomiting, colic, furred tongue and prickling sensations in the calves of the legs. Considered by themselves

these symptoms would never suggest a specific disease, and can only be regarded as an introductory stage when occurring during the course of an acknowledged epidemic of Asiatic cholera. In the latter case, however, they act as premonitory symptoms of the second stage, in which all the symptoms become greatly increased in intensity: the diarrhœa and vomiting become profuse and violent, and the prickling in the extremities gives place to violent cramps, and the third, or algid stage is soon ushered in with its well-known alarming symptoms.

As our treatment of cholera is purely symptomatic, the treatment must necessarily vary according as the disease is met with in one or the other of these three different stages.

First as regards the treatment of the premonitory symptoms; the danger of treating the premonitory diarrhœa with purgatives, as would under other circumstances be indicated, has been clearly shown. It might be supposed that if we acknowledge the cause of cholera to lie in a germ which produces its ravages while in contact with the intestinal mucous membrane, the sooner that germ could be removed, the better for the patient; but it must also be remembered that contact with the acid gastric juice destroys the vitality of the cholera bacillus, so a cathartic may only hasten its passage from the acid stomach to the alkaline intestine; so if an evacuative treatment is required an emetic would be preferable to a cathartic. And experience confirms this, for ipecac in emetic cases has been found to be one of the best modes of treatment in the initial stage of cholera: it should be followed by the administration of 20–30 gtt. of laudanum, associated with other astringent remedies, such as bismuth, or different preparations in which tannic acid is the principal ingredient. And as it is well known that acids are fatal to the germs of cholera, lemonade containing from 1–4 parts of sulphuric acid to 1000 of dilute mucilage sweetened with syrup, may be freely drank and usually exerts a remarkable influence on the diarrhœa, though the vomiting may be increased; but that, as already indicated, is not necessarily disadvantageous.

When, by the great increase in the violence and frequency of vomiting and purging, the second stage may be said to have set in, the greatest difficulty will then be met with in causing the patient to retain any remedy long enough to permit of absorption. In arresting the vomiting which is now indicated, various cold drinks, such as iced champagne, beer, seltzer water or yellow chartreuse cordial given repeatedly in small quantities, will sometimes succeed, though occasionally warm aromatic infusions, as tea, mint infusion, or punch will reduce vomiting after cold drinks have failed; revulsives, such as mustard plasters to the epigastrium, may be combined with this treatment.

Against the diarrhœaic flux of the second stage the same remedies have been proposed as against the premonitory diarrhœa, but the gradual, progressing dehydration of the blood and its resulting stagnation renders absorption extremely difficult, not only of remedies thrown into the alimentary canal but even of those administered subcutaneously: while again the second danger is met with that if drugs be given in any quantity, if fortunately the patient reach the stage of reaction, he may then be killed by the sudden absorption of drugs which had accumulated in the system. Hypodermic injections of opium, therefore, in such conditions, are especially to be avoided in the second stage of cholera when elimination by the kidneys is arrested, and opium preparations which are useful in the primary stage of cholera are hurtful in the second stage.

Attention must then be directed to sustaining the patient and warding off the effects of the loss of water from the blood so as to prevent or reduce the severity of the algid symptoms, and the symptom which will now call for most energetic treatment is the occurrence of violent and painful muscular cramps. For the treatment of this symptom frictions with dry heat, camphorated alcohol, ammonia liniment, turpentine or chloroform have been used with more or less success. The principal requisite is that the different means should be persevered in. In cramp of the diaphragm relief may be obtained in applying hot turpentine stupes to the epigastrium, or by hypodermic injections of ether.

As stimulants to the circulation various means have been proposed. In the first place come cutaneous excitants, such as frictions, mustard baths, and hot irons; combined with the internal administration of diffusible stimulants, such as tea, ether, and above all, acetate of ammonia associated with ether, which seems to be particularly efficacious in causing increased fluidity of the blood.

Inhalations of oxygen also proved very valuable in the treatment of severe cases of cholera in the recent epidemic at Toulon, some cases which were apparently at the point of death being resuscitated, the skin gaining in tem-

perature and the circulation becoming almost normal. Sometimes, however, this reaction is only ephemeral, and the inhalations are contraindicated where somnolence and a low form of delirium are the prominent symptoms. The inhalations of oxygen also seemed efficacious in reducing vomiting.

In addition to these purely symptomatic means of removing the effects due to dehydration of the blood, various measures have been proposed for directly restoring to the blood its normal fluidity and composition, such as injections of liquid into the serous cavities or subcutaneously, or the direct intravenous injection of alkaline solutions. Of these methods the latter plan has proved the most serviceable, though it also will often fail; the probabilities, however, of success will be greater if the method is commenced at the onset of the algid stage, and not depended on as a last resource. Large quantities of liquid should be slowly thrown into a vein; it should be alkaline in reaction (10 parts of chloride of sodium to 1,000 of water) and should be warmed up to the temperature of the body.

Still another method of treating cholera which has been highly recommended is the injection high into the large intestine of a solution of tannic acid, 5 to 10 parts to 2,000 of water containing a little laudanum. (See page 127.)

Finally, as regards the treatment of the stage of reaction in cases which successfully pass through the algid stage, quinine, lukewarm baths, and revulsives to the skin to overcome the congestion of internal organs, combined with concentrated foods, will prove most efficacious.

THE ACTION OF DIGITALIS ON THE ISOLATED REPTILIAN HEART AND ARTERIOLES.

IT IS well known that the separate labors of Boehm, Williams and Schmiedeberg have been concordant in showing that when the cut-out frog's heart is brought under the influence of digitalis, its working activity is increased. This alleged fact is one of practical importance as being in close accord with the brilliant results obtained by clinicians in the use of digitalis in failing heart-power. In apparent antagonism, however, to these seemingly established conclusions is the recent research of H. H. Donaldson and L. T. Stevens (*Journal of Physiology*, iv. p. 165). The method of these experimentations was novel, ingenious and very praiseworthy. Frogs and terrapins were the animals used. All the vessels of the heart were tied, except one Vena Cava and one Aorta into which were placed canulæ connected with an artificial circulation. The brain and spinal cord were destroyed, but not the nervous connections of the heart, so that the viscus can hardly have been said to be completely isolated, though for practical purposes such may be considered to have been the case. Under this arrangement the heart continued to beat for hours. When 100 c. c. or thereabouts, of prepared "blood" containing 0.002 to 0.005 grm. of amorphous soluble digitalin were allowed to run through, the typical result with the terrapin's heart was primarily a slight acceleration of the pulse rate joined with a decrease in work. Soon after the flow of poisoned blood had ceased, the pulse became normal, the work increasing more slowly. Subsequent doses took effect with a regularly increasing rapidity, but the slowing of the pulse did not generally appear until several doses had been given. Of experiments with frogs, we are told that "digitalin decreased the work of the heart." In attempting to reconcile this result with that previously obtained by experimenters, it becomes all important to study individual experiments. Unfortunately, but four of the numerous experiments performed are given as typical of the remainder; and, if attention be directed to the effect of the first administration of digitalin these experiments hardly bear out the deductions of Messrs. Donaldson and Stevens. In the first experiment recorded (Exp. viii.) the effect of the first application of digitalis blood is not noticed; in the second experiment (Exp. xvii.) the pressure or heart work increased from 21.4 to 22.6 during the four minutes of the passing of the digitalis blood; in the third experiment (Exp. xxiv.) the work of the heart increased in the five minutes during which the digitalis blood was running from 20.8 to 31.9 c. c.; and in the fourth (Exp. xxxiv.) the pressure was apparently unaffected, as in the ten minutes preceding the application it had ranged from 28.2 to 28.6 and at the close of the application it was 28.3.

In all experiments after the return of the normal blood to the heart there was usually an enormous fall of pressure; raising the suspicion that possibly something in the mechanical arrangements may have led to the heart being affected by mere change of the fluids. Even in the absence of details of the experiments, there is enough in the memoir of

Messrs. Donaldson and Stevens to show that the evidence upon which their conclusions are based is not as positive and free from contradiction as might seem at first sight; but it must be allowed that in the majority of cases digitalin when re-applied to the heart diminished rather than increased its working power.

In all these experiments the blood pressure in the heart was very low: and a series of experiments were made by Messrs. Donaldson and Stevens with higher intracardiac pressures, the result being 17 observations, 11 of which are followed by a fall in work and 6 by a rise. Out of four experiments made upon hearts with destruction of the semilunar valves, only in one did digitalis increase the work of the heart.

This does not necessitate, however, the belief that previous observers are wrong in their observations and in their conclusions. The cause of the difference seems to us correctly pointed out by our authors, in that whilst other investigators applied the drug as soon as might be, they "allowed the heart to beat for a long time (many hours) before giving digitalin and thus permitted it to fully distend for the pressure used." It has already been asserted by Williams that the over-work of the heart caused by digitalis is largely the result of its effects upon the distension of the cavity through an influence upon the heart muscles. It must be insisted that the longer a heart is kept in an artificial circulation, its interior distended by unnatural and unelastic pressure its muscle fed by an artificial substitute for pure blood; the more unnatural is its condition, and so far, therefore, from the method of experimentation employed by Donaldson and Stevens being superior to that of other observers, to our thinking by allowing the heart to beat so long they rendered it inferior. What is wanted is a knowledge of the drug's action upon the normal heart, and the quicker the test is made after the heart has been separated from its natural conditions the more likely is the result to be a true one.

The importance of these considerations is increased by the facts recently discovered by Kaufmann (*Revue de Méd.*, 1884) that the systolic and diastolic pressure is greatly augmented within the heart by digitalis. Anyone who has worked with digitalis must have recognized that it increases systolic energy and if it increases the capacity of the hollow muscle to enclose and its power to drive out blood, it must be looked upon as a cardiac stimulant. Even Messrs. Donaldson and Stevens do not seem to be fully assured of the depressant action of the digitalin, for towards the end of their memoir they say that "our method of taking blood-pressure was essentially the same as that used by Boehm for frogs, and gave us similar results. [Bœhm's results were cardiac stimulation.] Granting now for the moment the point, that these experiments which we have detailed, showing a rise of work, give the true result, there is yet a marked disproportion between the rise of mean pressure and the rise in work. Therefore we are compelled to bring in something besides the heart to account for the rise of pressure." This appears to us to be the legitimate and fair conclusion from the work of our authors. It does not require us to lay aside the great, overwhelming mass of experimental and clinical evidence that digitalis affects the heart directly as a stimulant tonic, but it strongly confirms the views of most recent investigators and clinicians that this is not the whole action of digitalis.

In a very important paper published in the *Journal of Physiology*, vol. iii. p. 62, W. H. Gaskell apparently demonstrated that there are drugs which act directly upon the muscles of the capillaries in which they are circulating.

Almost simultaneously, and entirely independently, Messrs. Donaldson and Stevenson and also Prof. S. Ringer and H. D. Sainsbury (*Medico-Chir. Trans.* vol. LXVII) applied the method of Gaskell to the study of the action of digitalin.

The plan of this experimentation is in general terms to attach reservoirs of prepared blood (*i. e.*, blood and salt solution) with the arterial system of the frog or tortoise, and to allow the liquid to drain through and come out of one of the veins—the brain, spinal cord and heart of the animal having been first destroyed. The pressure upon the arterioles in these experiments is constant; being produced by a column of liquid of fixed weight. Both sets of investigators found under these circumstances that digitalis narrowed the arterioles by a direct action upon their coats. This result is in accord rather than at discord with previous experimentation, and does not therefore require elaborate discussion.

Sometime since Schmiedeberg expressed the opinion that the rise of the arterial pressure caused by digitalis is purely cardiac in its origin, but the later, as well as to our thinking the older, experiments show the incorrectness of this, and we must consider it

established that the rise of the arterial pressure is the result of an action upon both the cardiac and the capillary muscle fibre. The labors of Gaskell and his successors go far to establish the law that when a drug acts directly upon the heart muscle it acts in a similar manner upon the capillary wall. So that by a double influence the blood-pressure is increased or diminished as the case may be.

THE TREATMENT OF LOCOMOTOR ATAXIA.

PROGRESSIVE locomotor ataxia has heretofore awakened more interest on the side of its causation and pathology than in its therapeutics; for the diagnosis of tabes has been, as a rule, tantamount to the passing of a verdict of death, and the physicians' energies have thus been directed almost solely to making the patients' latter days as comfortable as possible. To be sure, almost every drug in the pharmacopœia, and various surgical measures, such as nerve-stretching, cautery, etc., have been used in the treatment of locomotor ataxia; but if we except the results gained by antisyphilitic treatment in cases of specific origin, and it must be acknowledged that certain authors find in syphilis the invariable cause of this disease, but little improvement has followed their use. Some recent communications (*Schmidt's Jahrbücher*, Nov. 27, 1884), however, on the treatment of tabes, seem to warrant the hope that this gloomy view of the value of therapeutic measures in this disease may be dissipated.

Eulenberg in particular, believes that the cure of tabes is a possibility which by no means is to be disregarded, and he seems to substantiate this ray of hope in the report of three cases of well-marked ataxia, in which an almost perfect cure was obtained. The first of these cases, which it must on all accounts be regretted are so few in number, was that of a man 53 years of age, in whom the symptoms of well-developed ataxia, after five-and-a-half months treatment with nitrate of silver (35 grains in all having been given,) were reduced to impotence and vesical weakness, while his general health remained good for five years. He then passed from under observation, and later committed suicide. In the second case the disease occurred in an engineer 27 years of age, and with the exception of some anæsthesia of the finger-tips, is said to have been entirely cured by the water-cure and galvanism.

In the third case, that of a woman 45 years of age, galvanism and the application of warm water in Chapman's bag to the spine, produced marked improvement, which became still more marked when nitrate of silver was added to the treatment: in eleven months the only remaining symptom was paræsthesia of the right foot, and after five years a well-marked knee-reflex could be detected. Eight years later the patient was still in perfect health.

Though these cases are far too few to admit of any generalizations, yet, since the diagnosis of such an authority as Eulenberg can not be questioned—a point of special importance when the readiness with which ataxia may be confounded with multiple neuritis, spinal congestion, etc., is remembered—they at any rate demonstrate the fact that certain well-marked cases of ataxia may recover. And while it is doubtful as to what share may be attributed to the medical treatment in producing this cure, Eulenberg's remarks on the methods of treatment are well deserving of attention.

In the first place he shows that, as a rule, no benefit can be expected from the internal administration of nitrate of silver, for the salt will be decomposed in the alimentary canal and converted into an insoluble compound; in this fact, therefore, is probably to be found the explanation of the failure which has heretofore marked the therapeutic use of this preparation.

The *subcutaneous* use of the silver salt is accordingly recommended in ½ or 1 per-cent. solution of the nitrate, in 1 per-cent. solution of the phosphate of silver, or in the form of a solution of the albuminate of silver; the latter preparation being preferable as causing least pain and irritation. With this treatment should be combined the subcutaneous injection of sulphate of strychnia in one per-cent. solution, and the prolonged application of heat to the spine, as by means of Chapman's water bag.

If, however, the subcutaneous use of the silver salt cannot be borne, decomposition and the formation of an insoluble compound may be avoided, as pointed out by Bokai, by giving the nitrate of silver, freshly made up into pills with white clay, on an empty stomach, to be at once followed by the drinking of milk; the silver is then converted in the stomach into an albuminate of silver which is readily absorbed.

It would appear, then, that typical tabes need not be regarded as necessarily incurable;

that in the earlier and lighter stages, as well as in the long-continued typical ataxia, cures, from a clinical point of view, may be met with. To be sure such instances in cases where there could be no question as to the diagnosis are as yet great rarities. Thus, in his address before the Copenhagen International Congress held in 1884, Eulenberg could only claim five cures out of four hundred typical cases which he had had under his care. Of course the less severe cases in which the neuralgic and other symptoms of sensory disorder are less intense, offer a better chance of improvement; but here also, as in the more pronounced cases, there can be no question, probably, of a cure of the anatomical lesions of the disease; since even in cases which, in a clinical sense have been entirely cured—have been freed from all their subjective and objective symptoms—diffuse degeneration of the gray matter of the posterior columns of the cord will be found post-mortem.

These apparent cures reported by Eulenberg may, to be sure, be attributed to the tendency of prolonged intermission possessed by this disease; but a treatment which leads to an absence of all symptoms in a marked case of tabes for a period as long as *fifteen years*, as reported in the third of the above cases, is for all practical purposes as good as a cure.

THE NECESSITY OF GOVERNMENT AID TO MEDICAL RESEARCH.

IT HARDLY seems worth while to occupy the columns of the THERAPEUTIC GAZETTE with an elaborate discussion of the thesis at the head of this editorial, but we have thought possibly the following propositions might be given space, with the hope that some of our readers could use them to impress those who are set over us in governmental office.

PROPOSITION 1.—Among the most important discoveries of modern times are those which elucidate the causes and nature of diseases, and thereby aid in their prevention and cure. Witness the researches of Pasteur, Koch, and various other European savants; when these researches are perfected, knowing the causes of diseases, we will be able to largely control their production.

PROPOSITION 2.—Researches upon disease are expensive, and when most successful yield no pecuniary result to the discoverer. Such discoveries cannot be patented, sold, manufactured, or commercially dealt in. Witness vaccination: before its discovery small-pox killed one-half the population; now death from that disease is very rare; immeasurable gain to the people, no direct gain to discoverer.

PROPOSITION 3.—The great expense and little pecuniary reward make governmental aid of such researches a necessity, and all the recent great discoveries have been made with the aid of government. France, Germany, England, etc., are yearly spending large sums of money.

PROPOSITION 4.—Almost the only researches of this character made in this country were those inaugurated by the National Board of Health, and constituted the one great excuse for its existence.

PROPOSITION 5.—As the talent for making these researches exists here and there in various parts of the States, if only the expenses of the research were paid, much could be done at a very little cost.*

PROPOSITION 6.—The National Academy of Science was chartered by the United States to act as the scientific advisory body to Congress, and has so acted with marked success in various important matters; for example, the reorganization of the United States Geological Survey. It has the honesty, the talent, the knowledge of the scientific men of the country to properly direct expenditures for the aid of scientific research; but if preferred, a *properly constituted* national board of health would suffice for the purpose.

PROPOSITION 7.—An appropriation of $10,000 a year would accomplish a very great deal, and such experiment of attempting to remove the disgrace of our being almost the only civilized nation that is not in this way doing something for humanity, would not seriously cripple the resources of the United States.

DR. REAMY'S CASE OF ALLEGED OPIUM-POISONING.

IT is a matter of importance that practitioners of medicine should not be altogether afraid of drugs, and therefore we notice a re-

* This was the plan adopted by the National Board of Health: They knew a certain person A. existed at Philadelphia or New York, and said to him, employ your leisure time and we will pay your expenses and that of your assistant, giving you no salary. In this way was accomplished, for a few hundred dollars, what would have cost thousands if an organized institution with salaried officers had to be paid at Washington. More than this, the proper talent could be more readily obtained.

cent case in which death was attributed by Dr. T. A. Reamy, of Cincinnati, to a hypodermic injection of one-quarter of a grain of morphine (*Boston Med. and Surg. Jour.*, Jan. 3, 1885), but in which there appears to be little probability that the alkaloid caused the fatal result. No symptoms developed within an hour after the taking of the injection, and to our thinking it is incredible that a fatal dose of morphine given hypodermically should be so long in acting. Moreover, the symptoms did not concur with those typical of opium-poisoning, as is shown by the skin being cold and moist, the pulse rapid and feeble, the breathing shallow an hour-and-a-half after the first symptom, and the patient dying five hours later. Further, neither atropine nor artificial respiration effected anything. There seems to be no knowledge as to the state of the kidneys ; and when it is remembered that the detailed symptoms rigidly agree with those of some forms of apoplexy and that no post-mortem was made, it is evident that the death was most probably due to the disease just mentioned and should not be allowed to go into medical literature as one of opium-poisoning.

Reports on Therapeutic Progress.

NOTE ON KAIRINE.

Although more than a year has elapsed since FILEHNE called the attention of the profession to the remarkable antipyretic properties of kairine, and although his observations have been freely confirmed by many physicians in Germany, the drug seems to have been resorted to but rarely in this country. Indeed the paper published by DR. JAMES H. HUTCHINSON in the *Phila. Med. Times* Nov. 27, 1884, is about the first careful clinical study of the efficacy of kairine in the treatment of hyperpyrexia that has been made in this country.

As related by DR. HUTCHINSON, kairine was originally made known to us through the experiments of FISHER and KÖNIGS, and is one of a series of artificial alkaloids derived from chinolin by the addition of oxygen, hydrogen, and carbonic acid. It occurs in a yellowish-white crystalline powder, of a somewhat pungent bitter taste, which is excessively disagreeable to most patients. Given in doses of from 15 to 22 grains to healthy adults, it has no physiological action and no effect upon the temperature. It also does not produce any unpleasant effects, such as headache, ringing in the ears, or sickness. When, on the other hand, it is administered in hourly doses of 7½ grains in febrile conditions, with the temperature ranging between 103° and 105° F., the temperature is usually reduced in two hours from three to five degrees, and not infrequently falls to normal. The defervescence is generally accompanied by profuse perspiration, which usually continues until the temperature ceases to fall, by shivering, and by a greenish discoloration of the urine. If administered in larger doses (from 22½ to 50 grains) it often produces grave symptoms, such as cyanosis, apathy, and subnormal temperature, which necessitate the prompt use of stimulants. Occasionally collapse is produced by it, resembling, it is said by Drs. FREYMUTH and POLCHEN, that of cholera Asiatica, but differing from the latter in the sense of vigor felt by the patient, who invariably recovers. FILEHNE says the temperature is often reduced to 94.6° F. by doses as small as the eighth of a gramme in patients of slender build or who are emaciated or suffering from hectic fever.

GUTTMANN has given kairine in cases of pneumonia, measles, phthisis, typhoid fever, scarlatina, pleurisy, peritonitis, erysipelas, ague, septicæmia, and apparently always with advantage. On the other hand, DR. H. MENCHE's (of Rheydt) experience with it in the pyrexial stages of pneumonia, pleurisy, and pernicious anæmia was unfavorable, which has been attributed by others to the use of large doses. In rheumatism, he found that its use was followed by diminution of the pain, but not by any reduction in the swelling of the joints. FREYMUTH and POLCHEN have prescribed it in relapsing fever, with the following results: When given from the fourteenth day after the first attack of relapsing fever, the second attack occurred as usual, but in a very modified form, with a rigor but no elevation of temperature, and with spirilla in such small numbers that the nature of the attack was barely recognizable. This continued for twenty-five hours, when the kairine was omitted. Two hours afterwards a classical relapse occurred, with a temperature of 104.9° F., and spirilla in abundance.

The first case in which DR. HUTCHINSON was induced to try kairine was one of typhoid fever of more than ordinary severity.

The patient, a robust young Irishman, was admitted to the Pennsylvania Hospital in the second week of the disease, and was treated

in the usual way for the first week. On the ninth day after his admission, it being noticed that there was little, if any, morning remission, and that the temperature was 103° F., it was determined to make trial of the new drug. A dose of eight grains was accordingly given at 1 p. m. on May 5. An hour later, no effect having been produced, a second dose of the same amount was administered. At 3 p. m. the temperature was found to have been reduced to 101° F. At 5 p. m., as the thermometer showed that the temperature had risen again to 103°, a third dose of a like amount was prescribed, with the result of a fall of temperature within an hour to 101⅘° F. At 8 p. m. the temperature had again risen to 103°, and a fourth dose was accordingly administered, and the temperature again reduced one-and-a-half degrees. The exhibition of the drug was followed by depression, by profuse sweating, and, after the last dose, by some muscular tremor. The depression of temperature was temporary, lasting only about an hour. Kairine was not administered again until the fourteenth day after admission, when it reduced the temperature in an hour from 102.5° to 100°. In the meantime the fever had ceased to be continuous, the morning remissions being as marked as they usually are in the third week of typhoid fever.

In one other case of typhoid fever kairine was also given with as marked results as those just detailed, and it also reduced the temperature very considerably in a case of malarial fever; but in this latter case the dose was not pushed as in the other cases, on account of the extreme debility of the patient.

A case of sunstroke is also reported in which kairine was given. The patient, who had a temperature of 105°, was conscious, but almost delirious with pain in his head. A cold bath was given to him immediately after his admission to the Pennsylvania Hospital which reduced the temperature a few degrees. It rose again soon after, and the skin became as dry and burning as before. Eight grains of kairine were then given to him. In an hour his temperature had fallen two degrees, and he was covered with a profuse perspiration. The temperature after this steadily fell, and in three hours it reached the normal.

Observing that profuse perspiration was one of the consequences of its administration in the above cases, it occurred to Dr. HUTCHINSON that kairine might possess valuable properties as a diaphoretic. With this end in view, he gave it in eight-grain doses to a patient with general anasarca dependent upon disease of the kidney. No sweating followed its use—a result which was probably due to the fact that the patient was free from fever. It will be remembered that in the author's opening remarks it is expressly stated that no sweating is produced by its administration in health.

The cases just reported demonstrate that kairine possesses the power of reducing the temperature of the body in fever to an unusual degree, and that it does this with certainty and promptitude, and, it may be added, when moderate doses are used, with safety. One care, however, it is necessary to exercise in its administration, and that is to use fresh specimens of the drug only, as it undergoes change if kept for any length of time. It reduces the temperature much more rapidly than quinine, although the apyrexia produced by it is of much shorter duration than that caused by the latter. It is also capable of depressing the temperature during the evening exacerbations of fever, while the most marked results are obtained, on the other hand, from quinine just before the morning's remission. Its use is also free from some of the objections usually urged against the latter, as it does not give rise to unpleasant effects, such as headache, ringing in the ears, and the like. Although less rapid in its action than the cold bath, it is obvious that it may be administered in many cases in which resort to the latter would be impossible. The excitement and terror which are often occasioned by the use of the bath, even when it is brought to the bedside of the patient, constitute a positive objection to it, which, in the author's opinion, becomes insuperable in cases in which it is necessary to carry him some distance to a bath-room. It is said to exert a marked and favorable influence over the brain-symptoms which occur in fevers, possessing, in this respect, an undeniable advantage over several of the other antipyretics.

THE RARER ACCIDENTAL EFFECTS OF SALICYLATE OF SODIUM.

The extensive use which is made of sodium salicylate, and the very large doses of this drug which are now administered, make it desirable that its rarer accidental effects should be widely known; especially as they simulate the symptoms seen in acute eruptive fevers, are of a very grave nature, and have in a few instances led to a fatal issue. It is scarcely necessary to allude to the more com-

mon by-effects of the salicylate of sodium, such as profuse perspiration, headache, tinnitus, deafness, vertigo and delirium of a highly exciting nature; and all those relating directly to the intestinal tract, such as nausea, vomiting and diarrhœa. In the *Medical Chronicle* for December, 1884, Dr. DRESCHFELD calls attention to the rarer effects produced by this drug, such as a rise of temperature, which may reach 104° or more, various skin affections, such as erythema and urticaria, dyspnœa, with great oppression and amaurosis; and he reports several cases in which one or more of these symptoms followed the use of this drug in ordinary doses. In one of these, that of nephritis after an attack of diphtheria, salicylate of sodium was given and was followed two days after the commencement of its use by a sudden rise of temperature to 103°, severe headache and drowsiness, dry and brown tongue, nausea and vomiting, with a pulse of 120. These symptoms continued to increase in severity. Two days later the patient appeared to be sinking, and although the presence of pus in the urine, and of pain in the left renal region, seemed to point to pyelitis and pyæmia, yet the symptoms corresponded to neither the one nor the other.

The salicylate was then stopped and fifteen grains of quinine given, and in the course of a few hours the temperature came down to normal, and on the next day the patient was in every way very much better: but the urine contained considerably more pus, and in consequence of this the salicylate of sodium was again administered, to be again followed on the next day by headache and drowsiness, and the appearance of a marked erythematous rash on the face, chest and arms, the temperature being $103\frac{4}{10}°$, and splenic dullness again increased, with the tongue brown and dry. The drug was again stopped, and on the day after the patient had again greatly improved. Five days later the same symptoms were again noted, and on examining the urine with perchloride of iron the salicylic acid reaction was obtained, and it was therefore concluded that the patient must have received by mistake a dose of the salicylate. This constant sequence of symptoms after the use of this drug, and their immediate disappearance when its use was suspended, seemed clearly to prove the causal connection between the administration of the drug and the symptoms above detailed, but in order to make it quite sure that these attacks were actually produced by this medicine, Dr. Dreschfeld once more tried a small dose of the salicylate. Five grains were given at 2 p. m., the patient's temperature being then normal, the urine containing a mere trace of albumen and pus, the tongue clean, pulse 72, respiration 18. One hour after the administration of the salicylate the patient had a rigor; the pulse was then 120, the temperature $100\frac{2}{10}°$, respiration 39, and there was great dyspnœa and oppression, the patient being drowsy, her face dusky and her lips bluish; three hours later the temperature had risen to $101\frac{4}{10}°$ and a marked erythematous rash was seen on the face, back of arms, and fore-arms; just as in the previous attacks, so also, here these symptoms disappeared on the discontinuation of the use of this medicine. There can, therefore, be no doubt but that the symptoms above detailed were due to the salicylate of sodium. It is curious to notice that the idiosyncrasy for the drug increased with each successive administration. For, whilst during the first administration the symptoms only came on on the third day, on the last attack the patient's temperature had already risen three degrees in one hour after the administration of five grains. Again it was noticed that the symptoms were not always the same; thus the rash was scarcely perceptible during the first attack, the sickness was absent during the third attack, and the dyspnœa was chiefly marked during the first and last attacks, while a rigor was only present in the second and fourth attacks. It was also noticed that immediately after each attack the patient passed more urine which contained more urea.

Cases of a similar description appear to be of quite rare occurrence, since Dr. Dreschfield was only able to find records of four cases in which the use of this drug was followed by marked rise of temperature; though experiments on animals have proved that the use of salicylic acid and its allies may be followed by a febrile increase of temperature. The skin eruptions without pyrexia, however, appeared to be more frequently seen, as several cases have been reported in which urticaria has resulted from the use of this drug in rheumatism. As regards the dyspnœa, cases reported of Quincke and Ogston show that this may form the most prominent feature in this complex of symptoms, and may even lead to a fatal issue; while Dr. Dreschfeld further states that he has himself seen this peculiar by-effect twice, once in a case of phthisis, where from its sudden onset it was at first attributed to pneumo-thorax, and once in a

case of rheumatic arthritis complicated with mitral regurgitation. Experiments on animals have shown that the influence of the salicylate of sodium on respiration is very similar to that observed in the cases given above. Small doses increase the respiration, large doses produce marked dyspnœa, often with diminished respiratory frequency, and eventually death seems to be caused by paralysis of the respiratory centre.

THE EXCISION OF A TUMOR FROM THE BRAIN.

For the last few weeks several notices have appeared in various medical journals concerning an operation performed upon the brain by MR. RICKMAN J. GODLEE under the advice of DR. HUGHES BENNET, which has appeared worthy of attention as illustrating the value of experiments on animals in the treatment of human disease. This operation, which consisted in the removal of a tumor from the brain, was, we believe, the first performed, and has naturally attracted much attention.

The case was that of a young man, aged 25, who had always led a healthy and temperate life, and had about four years ago received a blow on the left side of the head. The effects were temporary, and did not interfere with his usual occupation. With the exception of occasional headaches he remained in his usual good health for a year, when he began to experience slight twitchings in the left side of his face and tongue, which gradually increased more and more in severity, until finally they culminated in general convulsions and loss of consciousness. These attacks came on at intervals of about a month and continued for two years and a half. Six months ago he was attacked for the first time with spasmodic twitchings of the left arm and hand, and these continued daily and alternated with the twitchings of the face, the two rarely occurring at the same time. Shortly after, greatly increasing weakness of the left hand was observed, and finally reached such a marked degree as to prevent him using his tools. Since then, twitchings of a similar nature have taken place in the left leg, and subsequently in the left eyelid, occurring in paroxysms several times a day. His intelligence as well as all his functions and organs were normal, with the exception that on deep-seated pressure there seemed to be tenderness in the upper parietal region, a little to the right of the middle line. The movements of the balls and pupils were normal. There was well-marked double neuritis; most marked in the right, but vision was normal. There was slight comparative immobility of the left side of the face; tongue, when protruded, pointed slightly to the left; articulation seemed natural; hearing normal, but somewhat less acute on the right side. There was complete paralysis of the left fingers and wrist; very limited movements of the elbow and at the shoulder. The left lower extremity was weaker than the right; and although the patient could walk, he did so with a limp, and he could not clear the toes from the ground. The mechanical irritability of the muscles, the knee-jerk, and the ankle-clonus were most marked on the left side. The sensibility of the skin was everywhere normal, and there was nowhere any muscular wasting. The patient also suffered from violent paroxysms of lancinating pain in the head and from frequent attacks of uncontrollable vomiting. The twitchings also occurred many times a day without loss of consciousness, and these usually began in the fingers and thumb of the left hand, and consisted of rapid rythmical movements, lasting for a minute or two. Sometimes confined to the arm alone, sometimes to the face alone, but occasionally they began in the face, and from there extended from the arm and down the leg of the same side. These symptoms led Dr. Bennet to the conclusion: 1st, that there was a tumor in the brain; 2d, that this growth involved the cortical substance; 3d, that it was probably of limited size, as it had destroyed the centres presiding over the hand, and only caused irritation without paralysis of the centres of the leg, face and eye-lids which surround it; and 4th, that it was situated in the neighborhood of the upper third of the fissure of Rolando. This diagnosis having been made, Dr. Bennett suggested, since the patient's suffering had become intolerable, that the tumor be removed by operation. This being agreed to, on November 25th, Mr. Godlee trephined the skull and removed a triangular piece of bone over the region corresponding with the upper part of the fissure of Rolando. When, however, the piece of bone was removed and the cortex of the brain exposed, no tumor was visible, though the ascending frontal convolution seemed to be somewhat distended. An incision was then made into the gray matter in the direction of the blood-vessels, and one-fourth of an inch below the surface a hard glioma, about the size of a walnut, was found

and easily removed, hæmorrhage being arrested by means of the galvano-cautery, and the wound brought together by sutures. Since the operation the patient's condition has continued to be satisfactory. He has totally lost the lancinating pains in his head, and the vomiting and the convulsions of his limbs have disappeared, his appetite is excellent, and all his functions are normally performed. We need scarcely observe that the further progress of this case will be watched with the greatest interest by all who appreciate the important physiological and clinical principles involved.—*Lancet*, December 20, 1884.

[We have since learned that a hernia of the brain subsequently formed, resulting in cerebritis and death. While this unfortunate termination of so remarkable a case is greatly to be regretted, it proves with what accuracy diagnosis of obscure cerebral lesions, thanks to vivisection, may now be made; and although even in operations performed on the brains of animals the mortality has been as high as 20 per cent., the operation in the present case appears to have been perfectly justified, and it is to be hoped that its unsuccessful issue will not prevent surgical interference in other similar cases.]

PARALDEHYDE AND PISCIDIN.

The incessant search for a hypnotic as prompt and reliable as opium or chloral but free from the objectionable features of these, has led to very gratifying results: Two more remedies, paraldehyde and piscidin, with purely hypnotic virtues, present themselves to the profession. We abstract from a paper of Dr. Fronmüller some of the more interesting points relating to the drugs in question. Piscidin is contained in the rind of the root of Piscidia erythrina, *sive* corallodendron, a leguminous tree of the Antilles. The name piscidia, *i. e.* fish-killer, is derived from the power of a decoction of the root-bark to stun fish, as was well-known to the inhabitants of the islands. Hart and Nagle prepared a resinous, granular body, which they termed piscidin. Its composition is C_{29} H_{29} O_{81}, easily soluble in alcohol and ether. Piscidia has been but sparingly employed in the past. In Osterlen's work on Therapeutics (1856, p. 731) it is mentioned, with the addition: "it produces in larger doses coma and sleep." Hamilton found its tincture to have anæsthetic effects in toothache.

In England the fluid extract of piscidia is successfully employed against mental affections, uterine colic, vesical troubles, cramps, and asthma. Seifert made a series of interesting experiments in the Julius hospital in Würzburg with the dry alcoholic extract of piscidia as prepared by Merck. In doses of ⅜ grain, Seifert states, the extract was found valuable in the violent coughs of phthisis, without causing any objectionable symptoms. Given to a healthy person, the drug produced profound sleep, slight heaviness in the head in the morning, slight enlargement of the pupil, but no effect on pulse and temperature, or diuresis. Fronmüller has made 103 experiments altogether, with four different preparations of piscidia, viz: 25 experiments with the alcoholic extract of piscidia; 69 experiments with the fluid extract of piscidia, 5 experiments with the glucoside powder, and 3 experiments with the resinoid.

The dry alcoholic extract was given in pill form, 2-4 pills, at 9.30 p. m. each of 1 gr. to 35 patients suffering with insomnia, with 9 complete successes. The patients fell asleep within one-half to two-thirds of an hour after having taken the drug, without showing, after awakening, the slightest symptoms of intoxication, or being constipated. Three cases were of but moderate success, their sleep being not uniformly tranquil and continuous; in eight cases the sleep was quiet and lasting, though in the morning they showed symptoms of cerebral congestion; vomiting occurred only in two cases. In five cases the drug proved useless.

The fluid extract of piscidia was given in doses varying from 55 to 100 drops, the best results being obtained in doses of 75 drops. Compared with opium, piscidia is inferior to it in narcotic power, but the piscidia-narcosis is milder and less dangerous than that of opium, does not constipate, produces no itching of the skin, and has no influence on the temperature, pulse, secretion of urine or sweat. Besides these hypnotic virtues, piscidia acts also as an anæsthetic. The glucoside powder was tried in one-half-grain doses in four cases, of which three were completely successful, and the resinoid in three-grain-doses in four cases with three successes.

Paraldehyde is a polymorphous modification of aldehyde, its formula $C_6H_{12}O_3$; it is a liquid of pungent taste, colorless, and soluble in eight parts of cold water. It was first discovered by Dr. Cervello, of Palmero, in the pharmacological laboratory of Strassburg. Morselli, in Florence, tried the remedy in forty-five-grain doses in 330 cases. It pro-

duces, as stated by him, a quiet sleep, closely resembling the physiological state, without previous excitation or succeeding headache. It acts in half an hour. Circulation and respiration are not more influenced than in a natural sleep, digestion is unimpaired, cardiac action remains unaffected; hence, atheroma and incipient fatty degeneration of the heart are no contra-indications to its use. In these respects paraldehyde is superior to chloral-hydrate, which depresses, as is well known, the heart considerably. Cervello holds that the drug acts primarily on the cerebral hemispheres, then on the medulla oblongata and spinalis, and that consequently, after large doses, respiration stops, but the heart remains unaffected; and that the final arrest of the latter depends upon the stoppage of respiration. Peretti found that in doses of forty-five to ninety grains, given to a healthy person, a sleep of 24 hours' duration could be readily induced without preceding excitation or succeeding headache, or other unpleasant symptoms. Berger's and Langreuter's observations confirmed the results of these experimenters. Slight inconveniences were caused by the unpleasant taste and the lasting, penetrating odor of the drug. There is no danger of the acquiring of any drug-habit in the use of paraldehyde. Worden used it 120 times with favorable results, even in myocarditis and valvular affections. Dangerous lowering of cardiac pressure, as in chloral-hydrate, has never been observed; hence, the drug is especially indicated in weak individuals, and in cardiac affections contra-indicating chloral-hydrate. In grave gastric disorders and ulcerated states of the mucous membranes of the throat, the drug is contra-indicated. Rank has tried the remedy in 30 cases at the St. Catherine hospital in Stuttgart, but does not place the same confidence in it as the other observers mentioned; he was only five times successful with it. Fronmüller regards Rank's inattention to the proper doses as the cause of his failures with the drug, and, after trying it in 68 cases, with 42 complete successes, recommends it highly.—Betz *Memorabilien*, 1884, 7.

TREATMENT OF CHOLERA.

PROF. CANTANI and several of his colleagues in Naples have obtained very gratifying results in the recent epidemic of cholera from the use of enemata of tannic acid and laudanum. Enemata of this composition, when employed against the premonitory diarrhœa, caused nearly always the disappearance of every morbid manifestation. Employed later, when the diarrhœa had assumed the decided character of cholera, they always retarded the evacuations, checked the march of the disease, prevented the development of other symptoms and, in fact, seemed to abort the disease. The tannin-opium enema is then claimed to be an abortive remedy *par excellence* against Asiatic cholera; such, at least, is the positive conviction of Cantani and besides of eleven other eminent Italian physicians. One of these, Vitone, attached to the Orphan Hospital in Naples, has used these enemata in all children that had diarrhœa; they were immediately cured without, according to the usual custom, being conveyed to a special hospital.

A possible explanation of the *modus operandi* of the remedy in question may be found in the theory of Prof. Buonomo, according to which the disease originates in the colon and cæcum; the remedy is thus enabled to reach the parasite and paralyze its noxious power by acidifying the intestine and so preventing its propagation.

The formula employed in adults is as follows:

℞ Infusion of chamomile flowers, 3 pints.
Tannic acid, 2 dr.
Gum Arabic, 7 dr.
Laudanum, 40 drops.

In a more advanced stage, when the most threatening symptoms are due to the want of water in the system, and thickening of the blood, Cantani and others have used copious subcutaneous injections, which were proposed by himself in 1865 and advised also by Samuel, of Königsberg, in 1883. The liquid employed consists of a solution of 2 drs. of chloride of sodium and 45 grains of subcarbonate of sodium in two pints of warm water. The injected quantity is to be large, a quart and more. The results obtained with these injections were far superior to those obtained by intra-venous injections. Besides the ease and comparative harmlessness of their use, they mix better with the blood, without throwing a column of almost pure water in the circulation. Absorption of as much as a quart and even more, injected under the skin of the thorax or abdomen, is seen to take place within a quarter of an hour. At the same time the general symptoms of the disease abate, cyanosis and cramps disappear, reaction takes place, though slowly and gradually. It is evident that these excellent results did not

produce a cure in every case and were the less pronounced, the more developed the pathological process was at the time of application of the remedy.

Considering the prejudice this form of medication encountered and that these injections were not generally employed, but only somewhat as a last resort, the following results are certainly very encouraging and far superior to those obtained by intravenous injections in France:

Perli,	4 cases,	2 cures,	2 deaths.
Marchetti,	7 "	4 "	3 "
Rubino,	1 "	1 "	0 "
Reale,	4 "	3 "	1 "
Rodini,	4 "	3 "	1 "
Ellari,	8 "	3 "	5 "
Chiaradia,	1 "	0 "	1 "
Vivanti,	10 "	8 "	2 "
Amoroso,	1 "	0 "	1 "
Marini,	98 "	90 "	8 "
Total,	138 cases,	114 cures,	24 deaths.

These statistics refer only to practitioners of Naples and are, of course, very incomplete; thus the results of Prof. Maragliano, of Genoa, who declared himself a great partisan of the subcutaneous method, are not included. —*Lyon Médicale*, December 21, 1884.

CHRONIC LEAD-POISONING.

DR. SCHULZ, of Greifswald, has published an interesting and detailed account of the pathological and therapeutic aspects of lead-poisoning, from which we select some brief passages (*Deutsche Med. Zeit.*, 102, 1884).

The predisposition on the part of the persons exposed to the influence of the metal, and the variety of the pathological processes in different patients, are matters well established but thoroughly unaccounted for. The manner in which lead finds entrance into the organism is very variable. Absorption through the skin is by no means so infrequent as generally considered. Prolonged applications of lead-water even to the uninjured skin, have often produced constitutional intoxication, not to speak of the effect of the metal on larger surfaces deprived of their epidermis, the lead probably entering the system in the the form of an albuminate. The principal mode of entrance is, of course, through the mucous membranes of the digestive and respiratory tract.—Regarding the discolorations caused by lead, the pale-greenish or ash-grey tint of the skin, most clearly discernible in the albuginea of the eye, is not yet fully accounted for; the blue line on the gum, however, is with certainty attributed to the local deposition of the sulphide of lead. Hilton asserts that a similar but more extensive deposition takes place in the intestinal mucous membranes. The sulphide of lead originates through a reaction between the sulphide of hydrogen, the result of decomposition of organic matter in the intestines and between the teeth, and the lead circulating in the capillaries. The fœtid breath invariably noticed in chronic lead-poisoning, has not yet received an exact explanation, though it is reasonably certain that the digestive derangements, inseparable from the affection, form a part in the causative agencies. The sensation of dryness and astringency in the mouth, always experienced by the patients, refers to the scantiness of the glandular secretions. The pulse is hard and tense, though its rate is reduced. Christeller has often noticed a considerable increase in the blood-pressure, whilst Malassez saw a distinct diminution of the red blood-corpuscles.—The nervous system is more powerfully impressed by the drug than any other part of the organism, the pathological changes produced by the protracted irritation of the metal in the interstitial nervous tissue and ganglia consisting in a primary increase of the vegetative processes of the parts, viz.: hyperæmia and hyperplasia and the inevitable reactive conditions of constriction and pressure, with the ultimate fate of fatty degeneration of the ganglionic elements. Nearly all the symptoms of chronic lead-poisoning find their rational explanation in this inflammatory process, which, slow in progress, but extensive in area, attacks both interstitial and parenchymatous nervous tissue, causing cicatrization of the former and fatty degeneration of the latter. Regarding the treatment, Schultz fails to suggest any novel remedies or methods of medication besides those long known and approved of, of which the iodide of potassium, of course, is the basis.

DR. STOOD, of Cologne, states that the first manifestationof chronic lead-poisoning,preceding even the characteristic appearance of the blue line on the gums, is a peculiar lack of optic accommodation, due to the toxic impression of the metal on the ciliary muscles. The patient, he states, complains of asthenopic difficulties, *i. e.*, he cannot read, write, or work in continuation. Later on a decided decrease in the power of vision, and in the sensitiveness towards light and color, ensues.

Positive ophthalmic evidence cannot be furnished until the last stages in the patho-

logical development, when distinct thickening and tumefaction of the veins of the retina appears. All these symptoms recede rapidly under the free use of the iodide of potassium and strict hygiene. This affection Dr. Stood calls by the somewhat stupendous name of "*neuritis optica retrobulbaris peripherica saturnina.*"

THE ACTION OF CHLORATE OF POTASSIUM.

Reports of numerous cases of poisoning by chlorate of potassium have served to direct attention to the great danger which may accompany the uncontrolled use of this drug by the laity, and some recent experiments by Dr. J. von Mering have served considerably to extend our knowledge as to the various actions of this salt. He finds that in the system, probably under the influence of carbonic acid, the chlorate of potassium becomes decomposed, with the gradual liberation of chloric acid which tends to reduce the alkalinity of the blood. When death results from the administration of one large dose of this salt, the result occurs as a sequence to decomposition of the blood, with symptoms of severe vomiting, profuse diarrhœa, intense dyspnœa, cyanosis and profound cardiac depression. On section post-mortem the blood is of a chocolate-brown color, whilst little alteration can be found in the appearance of the various organs. In a less acute form of poisoning, death results not only from an accumulation of oxidation products in the blood, but from the accumulation of these in the organs, especially in the kidneys, leading to the occlusion of the tubules and uræmia. As a result of this, dyspnœa and cardiac depression follow the changes in the blood corpuscles and gastro-intestinal disturbances are also usually severe, while delirium, coma and convulsions may likewise be observed. While the majority of cases of poisoning by chlorate of potassium do not terminate fatally, chronic poisoning by the salt is incredible. And, indeed, prolonged ingestion of small doses of this salt, 1-4 of an ounce to one ounce daily, has been followed by no injurious results.

The use of this drug should especially be avoided in fevers where there is already reduced alkalinity of the blood, and Von Mering condemns as especially dangerous to life the internal use of the salt in large doses in diphtheria. The author gives the following as the maximum safe doses, when the use of the salt is not altogether contra-indicated. For adults, thirty-grain doses, with a daily maximum of two drachms; for children aged one to ten years, 30 to 45 grains daily; and for infants not more than 15 grains daily, always given in divided doses.—*London Med. Record*, Dec. 15, 1884.

ANTIPYRINE IN CHILDREN.

The therapeutics of the diseases of childhood leaving yet so much to be desired, any suggestions or improvements respecting them cannot but claim our particular attention. Dr. Demme, the well-known authority in this field, has advanced some valuable facts regarding the employment of antipyrine in infantile diseases. The antipyretic properties of antipyrine, so well established through recent experimental and clinical observations, he holds act equally promptly in children. The fall of temperature following its use he found to be often rapid, rarely exceeding a lapse of two or three hours, the resulting apyrexia extending often over more than 24 hours, with a very gradual rise, in which respects it contrasted favorably with other antipyretics, especially with kairine. In erysipelas and rheumatic polyarthritis, antipyrine appears to exercise an almost controlling influence over the pathological processes, claiming especially in the latter affection, like salicylic acid, the character of a specific remedy.

Unfortunately, antipyrine causes a certain degree of cardiac depression, forbidding its exhibition in the graver types of diphtheritic infection, and in enfeebled individuals generally. Otherwise the drug is well tolerated, even at a very tender age, interfering with neither appetite nor digestion. Vomiting has but rarely been noticed, nor, according to the statements of older children, is it followed by the well-known symptoms of cerebral congestion which result from the ingestion of quinine and salicylic acid. The moderate diuresis observed after the administration of antipyrine is an additional recommendation for its use. A careful attention to the dose seems indicated in consideration of its depressant action on the heart, as previously intimated. Demme recommends three doses per diem, the first of 3½ grains, the second of 2½ grains and the third of 1½ grains.—*Fortschr. d. Med.* Bd. II., No. 21.

The results of clinical trials of antipyrine in the hands of other investigators seem all to confirm the therapeutic value claimed for it, especially in the treatment of affections of childhood. The following *résumé* of its

action, abstracted from a paper by DR. PENZOLDT (*Deutsche Medizinal Zeitung*, 101,1884), is intended to represent our present knowledge and experience regarding the drug. He advances the following seven points:

1. Antipyrine must be regarded as a remedy well indicated and appropriate in febrile affections of children.

2. In proper doses the drug causes a reduction of febrile temperature amounting to several degrees (Reaumur) and lasting several hours.

3. Reduction of the rate of the pulse does not always correspond with the degree of reduction of the temperature.

4. The effects on the general feeling are usually favorable.

5. Occasional vomiting was the only unpleasant symptom ever observed after its use. If vomiting occur persistently, administration by the rectum is to be resorted to.

6. As regards the dose, as many decigrammes (1½ grains) are to be given hourly for three consecutive hours, as the child counts years; this quantity is to be increased, if it prove insufficient, as will often be the case in small children. An enema may be of a strength of from three to six times as many decigrammes as the child counts years.

7. The organism, in a prolonged employment of antipyrine, appeared but rarely to become habituated to its use.

So also DR. ARGUTINSKY, of St. Petersburg, has further tried antipyrine in five cases of croupous pneumonia in children ranging between four and eight years of age. The drug, given as a powder dissolved in water, was readily taken, well borne, caused no unpleasant symptoms and but little sweating.

Vomiting occurred twice out of twenty-five administrations of the drug, general malaise but rarely. A reduction of febrile temperature followed usually within three hours and amounted to two degrees(R.); at times the temperature fell below its standard in health, without causing, however, any symptoms of collapse. An improvement in the subjective symptoms invariably took place. The pulse under the influence of antipyrine grew stronger and more regular, but did not vary in rate so quickly as the accompanying fall of the temperature would apparently warrant. The subsequent rise of the temperature is not so rapid as in kairine, but is gradual, extending over half a day or more; thus the absence of rigors is easily accounted for. Regarding the dose, Argutinsky advises the drug to be given to children as follows:

½ to 1 year	3 grains	every 3	hours
1 to 3 "	5 "	" 2 to 3	"
4 to 5 "	6 to 7 "	" 2	"
6 to 8 "	8 to 9 "	" 2	"
10 to 12 "	10 to 12 "	every hour.	

He regards three doses through the day as quite sufficient.

Nine further experiments which the author instituted with the drug, on healthy children, are also very interesting. Antipyrine reduced the normal temperature one to one-and-a-half degrees (R.): the maximum of the fall appeared at night, i. e. the time, when the daily variations reach their maximum. On the normal daily variations the drug appeared to exercise no influence.

THE PREVENTIVE TREATMENT OF POST-PARTUM HÆMORRHAGE.

At the meeting of the Liverpool Medical Institute, held Nov. 20, 1884, Dr. GLYNN WHITTLE (*Medical Press and Circular*, Dec. 17, 1884) read a paper with the above title, in which he pointed out that the premonitory symptoms of impending danger had been but recently studied, and that formerly there was nothing but the history of previous flooding to put the medical attendant on his guard. There were several conditions that predisposed to post-partum hæmorrhage—want of muscular contractility, lessened power of coagulation of the blood, and accelerated circulation. Chloroform was said by some to predispose to hæmorrhage, and by others not to have this characteristic. He adopted the former view. Preventive treatment should be based on the state of the patient. Attention to the pulse was of paramount importance. Previous to labor, open-air exercise should be enjoined, and abstinence from stimulants. If there was any fear of hæmorrhage during labor, the membrane should be ruptured when the os was fully dilated, or nearly so; this tended to improve contraction. The water should then be allowed to drain off, and if necessary, the head should be pushed back for the purpose. If the pulse was rapid, the practitioner should be on the look-out. The fœtus should be extracted slowly; sudden emptying of the uterus favored the occurrence of hæmorrhage. Adhesion of the uterus to the abdominal parietes or other parts might be a cause of hæmorrhage, as in two cases recorded by DeGorrequer Griffiths. He himself had met with two similar cases. Ergot was most useful, and the

fear of its action on the child should not deter us from its use. This action could only be mechanical. To be of real use it should be given some time before the child was born. It was of little benefit if only employed after labor. This had been proved repeatedly in his own practice when he had arrived too late. The action did not begin till forty or fifty minutes after administration. The forceps were not of so much service, as it was not chiefly in tedious labor that flooding was most likely to occur, but in cases of atony of the womb. In conclusion, he would sum up as follows: Notwithstanding what differences of opinion in matters of detail may exist, the conclusions of writers on this subject agree on all the main points, which may be thus summed up: First, that post-partum hæmorrhage has certain premonitory symptoms, and that these symptoms are to be found in the characteristic pains, and in the condition of the circulation of the blood. Secondly, that flooding can be averted by appropriate prophylactic measures, the preventive treatment consisting of rupturing the membrane, administering ergot of rye, extracting the fœtus slowly, and following down the uterus with the hand.

LOCAL SWEATING BY PILOCARPINE.

The exhibition of jaborandi, or of its alkaloid, pilocarpine, however reliable it proves in the various affections in which it is employed, has the disadvantage of lowering arterial tension and provoking considerable malaise when administered through the digestive tract. Hence any other method of administering the drugs in question, which would secure their principal physiological effects, viz., profuse perspiration, and exclude at the same time the above-mentioned objections attaching to them, should be deemed an acquisition. Of the extensive literature on the local application of pilocarpine, the inaugural essay of Dr. Baux, of Lyons, will amply repay its perusal and justify somewhat detailed synopsis here.

Straws, whilst engaged in researches concerning the sudoriferous secretion in cases of facial paralysis, in 1879, was the first to employ local medication with pilocarpine and publish pertinent results. After having used injections of $\frac{1}{4}$ grain and less he noticed, that through a reduction of the dose to one or two drops of water, holding in solution $\frac{1}{64}$ to $\frac{1}{16}$ grain of the nitrate of pilocarpine, he could limit the action of the drug to a local sweat, to the entire exclusion of systemic sympathy. Shortly after Aubert proved that substances in solution could traverse the skin without any existing erosion of the epidermis, provided the latter was rubbed vigorously with the palm of the hand before or after the application of the substance, and he repeatedly provoked local sweating by such an epidermic application of pilocarpine. He also made the following interesting experiment: After placing a few drops of a weak solution of pilocarpine in a glass of water, he plunged the point of a needle in it and pierced his skin with it; small drops or sweat appeared at once over the region of the lesion covering a zone as large as a franc-piece (about the size of a quarter of a dollar). Thus the capability of minute doses of pilocarpine of effecting comparatively extended local perspiration was firmly established, and the exclusion of all other constitutional symptoms, such as salivation, lachrymation, or reduction of arterial tension positively perfected. Mollière having previously obtained a fair success with his method of provoking sweating in certain articular affections with cotton, was naturally led to associate the use of pilocarpine with that of cotton. Dr. Baux endeavors to prove the augmented activity of pilocarpine, when associated with cotton, and that its local use leads to a quicker cure in local affections than its internal administration. The first thesis he proved by experiments made on his own person. He employed a pomade compounded as follows: pilocarpine $\frac{1}{3}$ gr., vaseline $\bar{3}$ vi, and cotton soaked in a solution of pilocarpine and afterwards dried. He then covered symmetrical parts of the body with cotton alene or cotton and pilocarpine-pomade and gained in 7 experiments, carefully conducted to avoid errors, differences in weight of secretion in favor of the parts treated with pilocarpine, varying from 35 to 80 grs.

Regarding the beneficial results attending the local sweating with pilocarpine in local troubles, Dr. Baux places this method of medication at the head of all other known remedial measures. In 31 cases of fractures, falls, torticollis, luxation, arthritis, articular rheumatism, and other affections, especially of bones and joints, he has obtained a degree of success respecting rapidity and completeness of cure unattainable in his opinion by other forms of treatment. In hydrarthrosis, pilocarpine has no curative effects; it proved useful, however, in two cases of white swelling, in cases of orchitis and of inflammatory swell-

ing after injection of tincture of iodine into the tunica vaginalis.

Regarding the mode of its application, Baux considers its endermic use, *i. e.*, after vesication of the cutis, as the most effective method of producing absorption of the drug. *Thèse inaug.*, Lyon.

ACTION OF ERGOTIN, ERGOTININ AND SCLEROTINIC ACID ON THE BLOOD-PRESSURE AND ON THE MOVEMENTS AND HÆMORRHAGES OF THE UTERUS.

The preparations of ergot belong unquestionably to the most important, in fact, most indispensable remedies in the treatment of hæmorrhages from internal organs, especially in the sphere of the female genitals, of the dangers of confinement, and finally, of the embarrassments of the vaso-motor system. Although the object of chemical, physiological and practical researches for over fifty years of many investigators, the isolation and crystallization of their active principles have never yet been accomplished; and the use of very different preparations, such as now in vogue, is the principle cause of the different opinions held at present regarding the physiological action of the drug. An essay by Dr. MARCKWALD, of Berlin, discusses critically these various, and often antagonistic views, with a presentation of original experimental researches on the subject.

Ergotin was found to have a very complicated and variable action on the blood-pressure, consisting in three different phases, viz.: A brief increase, a considerable fall, and a long-continuing, gradual rise of the pressure. The rate of the pulse falls in rabbits generally as the pressure falls, but rises in dogs both at the fall and rise of the pressure. This difference is due to the difference in the tonus of the vagi in rabbits and dogs, and the various influence of these nerves on the circulation. Cutting of the vagi eliminates all effect of ergotin on the pulse; electric irritation of the peripheral terminations of the vagi arrests the heart in its diastole. Great reduction of the pressure, caused by large or often-repeated small doses of ergotin, can but slightly, if at all, be eliminated by the cutting of both vagi.

The pressure cannot be raised by the drug after the section of the vaso-motor nerves in the medulla oblongata. Ergotinin showed some retarding action on the respiration.

Sclerotinic acid lowers both rate and pressure of the blood. The effects of ergotin and sclerotinic acid are more definite on the movements of the uterus, producing, a few seconds after the injection of the drugs, powerful constant contractions. The section of the vaso-motor centres in the medulla oblongata does not interfere with this action of the drug. Pregnant, puerperal or virginal animals are all equally affected in this respect by these preparations of ergot. The independence of the uterine contractions of the changes in the blood-pressure is quite manifest, the former occurring immediately after injection of the drugs, during all phases of the blood-pressure and even after section of the medulla oblongata. Hence the uterine contractions, caused by the drug, are attributable to the excitation of the motor-centres in the uterus.

Ergotinin has no influence whatever on the movements of the uterus, in spite of its capacity of increasing cardiac pressure, as intimated above.

Regarding the hæmostatic virtues of these three preparations, sclerotinic acid alone was found to be capable of retarding the blood-current.

As final conclusions MARCKWALD states:

1. Ergotinin is useless as a therapeutic agent for the purpose of causing uterine contractions.

2. Sclerotinic acid has hæmostatic powers to a sufficient degree to deserve its employment for obstetrical and gynæcological purposes. But its use is, unfortunately, precluded by the fact that both the acid and its salts are not suited for hypodermic use.

Ergotin having all the advantages without the disadvantages of sclerotinic acid is the only reliable therapeutic agent of all three preparations of ergot. When well purified and dialyzed, it can be preserved well, and a uniform action looked for from it. When diluted shortly before its use with a weak solution of chloride of sodium, which is far less irritant to the cellular tissue than water, and absolutely void of irritation to the mucous membranes—pain and the risks of abscesses will be reduced to a minimum.—*Arch. f. Anat. und Phys.*, Berlin, 1884.

REDUCED IRON IN THE TREATMENT OF ANÆMIA.

DR. JOHN W. MARTIN, of Sheffield, England, states in the *Medical Press and Circular* of December 3d, 1884, that for some time he has been using reduced iron in the treatment of anæmia with the greatest success, and

thinks that it is one of the most powerful remedies which we possess in restoring the condition of the blood in all anæmic states of the system. He has employed it chiefly in chlorosis, amenorrhœa, chorea and enlargement of the spleen following intermittent fever, and states that with the exception of those cases in which the impoverishment of the blood has been due to nursing, the cases in which he has found this form of iron most serviceable are those of young girls and women of chlorotic tendencies, and in women who have reached the change of life, in whom, beyond an unexplainable failure in the powers of nutrition, no organic disease is discernible. According to him, administration of this drug has been followed by symptoms of improvement within forty-eight hours, and the patients have steadily progressed to convalescence without change of treatment. When a tendency to constipation is present this may be best overcome by the use of the following mixture:

℞ Magnesii sulph. ℥ iiss.
Magnesii carb. ʒ ij.
Tr. nucis vom., ♏xl.
Sp. amm. aromat.,
Tr. cardamomi, ää ʒ ij.
Aq. menth. pip., ad ℥ viij.

M. ℥ i bis die.

The iron is usually given in the form of a pill, of which the ingredients and the strength of their dosage may be varied as circumstances may demand. The following prescription is that which he has found most serviceable:

℞ Ferri redact, grs. iiss.
Ext. nucis vom., gr. ½.
Ext. quassiæ, q. s.

M. ft. pil. no. xij.

S.—One to be taken three times a day at meal times.

PROPHYLAXIS OF OPHTHALMIA NEONATORUM.

The number of cases of ophthalmia in infants immediately after birth is very large, in spite of different modes of disinfectant treatment of the maternal vagina before and after delivery. Dr. Credé, Professor of Obstetrics and Gynæcology in Leipzig, endeavoring to prevent the development of the disease, instilled an antiseptic solution of borax into the eyes as soon as practicable after birth, but without any appreciable results. He later tried prophylactic instillations of nitrate of silver with marvelous success. From June, 1880, the date of the first application of this method, bearing henceforth his name, by Dr. Credé, ophthalmia has, as it were, disappeared from his private practice and hospital service.

Instead of registering 13 per cent. of cases amongst his infantile patients, he had in the four succeeding years less than two cases per thousand on his lists. The "Credé method" consists in the cleansing of the infant's eye, immediately after the section of the cord, with a soft rag soaked in filtered water and the dropping into the eye of one drop of a 2 per-cent. solution of nitrate of silver with a well-rounded glass rod. Subsequent reactive phenomena, such as redness and tumefaction, ought to create no uneasiness, as they soon disappear of themselves. Besides they only present themselves in a very small number of cases, especially in those born before full term.

The procedure is very simple and can be readily executed by any midwife in the absence of the physician. In the great maternities of Paris, Berlin, Vienna and other places the success of the Credé method has been as complete as its failure in Munich, where a 1-per-cent. solution of silver was used. —*Revue Médicale de la Suisse Rom.*, Dec. 15, 1884.

TETANUS AFTER HYPODERMIC INJECTIONS OF QUININE.

An interesting controversy respecting the hypodermic use of quinine, was recently carried on by two Italian journals (*Raccogl Med.* 11-13, 84, *Gazz. degli Ospit*, 72, 80, 84) with great vigor. A case of profound malarial infection, of the tertian type, was, after the failure of the use of quinine internally, treated with hypodermic injections of quinine. A consultation resulted in the diagnosis of a considerable splenic tumor, malaria, anæmia and gastric catarrh, and, of course, could but confirm the propriety of the mode of treatment employed. Eight injections were made altogether, each being followed by local irritation, but by an apyresis and an improvement in the gastric difficulties. After the last injection a great rise of temperature and an extensive œdematous swelling of that portion of the arm appeared where the last injection was made. The swelling extended on the next day to the elbow, the fever also rose. Rectal administrations of quinine caused an improvement of the febrile conditions and of the swelling on the arm and even a decrease

in the splenic dullness, but at the same time symptoms of great hyperæsthesia developed themselves, with successive tetanus and death. The fatal issue was preceded by a disappearance of the local symptoms of irritation and great hyperæsthesia during the last day. As cause of death was given "traumatic tetanus." Drs. Casati and Schivardi, two of the most eminent Italian physicians, declared that they were unacquainted with any such previous case of traumatic tetanus, whilst Drs. Tomasi-Crudeli and Bortolazzi, men of equal fame, each related several cases of tetanus following hypodermic injections of quinine that came under their observation. A peculiar neuropathic character on the part of the patient was held to be the predisposing agent to the tetanus as a consequence of the hypodermic use of quinine.—*Wien. Med. Bl.*, 46, 84.

MALT-EXTRACTS AS FOOD.

The use of malt-extracts is a direct outcome of the practical aspects of chemical knowledge in its bearing upon clinical medicine. The chemist observed that in the process of malting, the starch of the barley underwent precisely the same change as does starch in the human mouth, viz.: a conversion of the starch into sugar under the action of a ferment; and the identity of the change led to the utilization of the ferment (diastase), of cereals for the needs of infants where the digestion of starch was defective. By mixture with farinaceous food before being eaten or by being taken simultaneously with such food, malt-extracts have been found highly useful in the conversion of starch into grape sugar, and Dr. J. Milner Fothergill (*Practitioner*, November, 1884), shows that malt-extracts have also a direct value as food *per se*. In the malting process the starch of the grain is more or less converted into grape sugar, probably some is converted into maltose, while some is less completely acted upon and remains in the form of dextrine. In addition, however, to this metamorphosis of the starch, the albuminoids and the mineral salts of the grain are retained in a soluble and highly digestible form in malt-extracts. As a consequence malt-extracts form a most useful food where the digestion is gravely impaired, whether in infants or in adults. They constitute a food of a highly nutritious character in small bulk, and, therefore, valuable when the stomach resents the presence of food in any quantity. In many cases where the digestive powers are feeble, malt-extract requiring a minimum of the digestive act is very useful. It can be either taken alone or added to warm milk. In such a form it can be taken in many cases an hour or an hour-and-a-half after a meal with advantage, and this mixture of milk and malt-extract is particularly serviceable when food is required in the course of the night. Not only malt-extract but also other articles of diet prepared by the malting process, such as Mellin's food for infants, or Liebig's malt-food, may prove of high nutritive value and can be added to milk with great advantage in many dyspeptic conditions. In the prepared foods for infants, so many of which are now on the market, the flour has, as a rule been subjected to a high temperature, and in this way the starch has been partially converted into dextrine and sugar by the action of dry heat, the result, therefore, being analogous to the action of malt. Such cereal matters differ as regards solubility in the digestive tract as much from raw, uncooked flour as does bread or baked flour, and may also be added to milk or beef-tea, or made into puddings, with the greatest advantage in the treatment of dyspeptics. Such preparations are particularly indicated in cases where the digestion of starch is feeble, whether malt-extract be used with them or not.

TREATMENT OF ALOPECIA.

Dr. Pincus, of Berlin, regards the bald spots, often noted on the vertex of women, as caused by an alteration of the hair-follicles due to compression resulting from articles of toilet worn in that region. Against this form of alopecia, Dr. Pincus successfully employs the following:

℞ Acidi lactici (*sive* ac. citr.), 0.50—100 part.
Acidi bor., 2.00—5.00 part.
Aquæ dest., 220 part.
Spir. vini rectif., 32—40 part.

M. S. Two tablespoonfuls daily to be rubbed into the affected part for three minutes.

He also uses the acids in form of a pomade as follows:

℞ Acidi lact. pulver., 0.25—0.75 part
Acidi bor., 2—3 part.
Adipis, 125.
Olei oliv., 5.00.

M. S. Rub into affected part twice daily for three minutes.

After such a treatment for two or three weeks, the acids are to be replaced for one week by the following pomade:

℞ Sod. carb. pulv., 0.75—2.
Adipis, 25.
Olei oliv., 5.

M. S. Rub into part twice daily for three minutes.

This medication is to be continued in the given order for one year, when the number of applications can be reduced.—*La France Médicale*, 145, 1884.

THE THERAPEUTIC ACTION OF THE ACONITUM FEROX OR INDIAN ACONITE.

Besides the aconitum napellus, with the effects of which as a vascular sedative and antipyretic all are familiar, we have in addition the following species of this drug: first, the aconitum paniculatum, which is devoid of pungency; second, the Japanese aconite, which deserves investigation as it is said to be largely used in England under the name of aconitum napellus; and third, the aconitum ferox and other less-known species. This latter species, the aconitum ferox, has been made the subject of experimental and clinical study by DR. D. H. CULLAMORE in a paper read before the Section of Pharmacology and Therapeutics, at the 52nd Annual Meeting of the British Medical Association (*British Medical Journal*, December 27, 1884). From his studies, aconitum ferox, or virosum, appears to be the most deadly and powerful of all the species of aconite. It is a native of the Himalaya mountains, being usually found at an elevation of from 10,000 to 14,000 feet, its presence being stated on good authority to indicate that the fever range is past: this fact might possibly suggest its use in malarial fever. The root is highly poisonous both internally, and when applied to wounds, the preparation of the root being much used in the hilly districts to poison arrows for the destruction of wild beasts and tigers, and even occasionally by the natives in warfare. The preparation which Dr. Cullamore used in his experiments was the tincture, made in the proportion of one part of the root to ten of proof spirit, and he reports the results which followed the administration of various doses to animals, and in cases of various diseases.

They seem to show that the mode of action of this drug is similar to that of aconitum napellus, the difference being more of degree than of kind; thus it is more diuretic and less diaphoretic than the aconitum napellus, and probably also because it is less diaphoretic it is less antipyretic. As an anæsthetic in acute rheumatic conditions it is superior to the aconitum napellus; while as a vascular depressant in small doses it is not so powerful, Dr. Cullamore stating that he has even given it in a case of fatty heart and intermittent pulse during an attack of inter-current congestion of the lungs in an old subject not only without danger, but even with a highly beneficial effect. In this case it quickened the heart's action, and it would appear that in minute doses it may act as a cardiac stimulant. In small doses it stimulates the nervous system at all parts. In moderate doses it produces perversion of sensation, as exemplified by the tingling and numbness, while in larger doses it is an anæsthetic and paralyzer of the nerves and other centres. Its first effect is to produce heat, followed by lowering of the temperature and cold perspiration, and its antipyretic effect appears to be due to a lowering of the central circulation by which it lessens the production of heat, while by its diaphoretic action it facilitates its removal; thus its action is different from that of quinine and some other drugs which destroy or minimize, by their antiseptic action, the conditions which lead to or tend to excite fever. When used in chronic rheumatic conditions, it may be given till tingling is produced: whereas, in acute rheumatism its action on the heart, though useful in moderate doses in the early stages, and in small doses throughout, must be carefully noted later on. In still larger doses it causes nausea and vomiting, muscular tremor of the limbs, profuse cold sweats, disappearance of the painful peripheral sensations, dryness of the throat and fauces, ardent thirst, alternations of heat and cold, great irregularity of the heart's action, respiratory feebleness and even loss of muscular power, great burning heat of the stomach, throat and intestines, attended with some muscular cramp. This condition, if life be prolonged, is followed by convulsions, delirium and death, which is sometimes attended with stupor, though in others the mind remains clear to the last.

PROF. NOTHNAGEL'S IDEAS ON THE TREATMENT OF FEVER.

On the occasion of Dr. v. Jaksch presenting his experiments with thallin, the new antipyretic, to the College of Physicians, of Vienna, PROF. NOTHNAGEL, one of the most eminent physicians in Europe, addressed the society on the abuses in treating typhoid fever and

all other fevers. The great error of the day, he said, is, that the physician thinks the fever is to be reduced at all cost. If a physician is called to a patient and he finds an increase of the normal temperature, yet is unable to form a diagnosis at once on account of the absence of other symptoms—he orders quinine or another antipyretic, while in order to avoid risk to the patient, a small dose only of quinine is prescribed. But what is the benefit of such a treatment? Does quinine act antipyretically in doses of 10 or 15 grains per diem? Certainly not; such medication cannot but injure the patient. Fever is by no means a phenomenon which has to be treated at all hazards like its local occurrence in inflammation, for instance. Fever is one of those beneficent reactions that are compensatory in their nature; it is a bridge, as it were, for the transition of the diseased organism to its prior state of health. He referred to the interesting researches of Metchinikoff, according to which micro-organisms were prevented from propagating themselves by an elevated temperature. A reduction or entire abatement of the febrile temperature does not shorten the duration of a disease a single day. Some typhoid affections, indeed, which without any therapeutic interference proceed without fever, prove fatal from other intercurrent causes. Cases of persistent or very high febrile temperature only call for an antipyretic treatment.—*Wiener Med. Woch.*, No. 48, 1884.

Reviews.

INTESTINAL OBSTRUCTION: ITS VARIETIES, WITH their Pathology, Diagnosis and Treatment. The Jacksonian Prize Essay of the Royal College of Surgeons of England, 1883. By Frederick Treves, F. R. C. S.

Philadelphia: Henry C. Lea's Sons & Co. 1884.

This book of Mr. Treves is a very thorough and exhaustive treatise upon the subject with which it deals; a treatise which we have read with the greatest of interest and with much of profit. In the perpetual repetition of medical literature, it is refreshing to come across a book, which is at once so original and so thorough. It commences by classifying intestinal obstructions according to their causes, calling attention, *inter alia*, to the statement of Dr. Dohrn, that adhesions in the abdomen may be formed before birth, and may give rise to a fatal intestinal obstruction, manifesting itself directly after birth. We are in close sympathy with Mr. Treves in the statement that "imperfectly" reported cases are, when not simply useless, actually misleading. We believe that such cases constitute one of the great obstructions to medical progress, and are as numerous in the journals as they are disgusting.

In regard to the diagnosis of the various forms of obstruction, Mr. Treves finds that when the latter is due to bands outside the gut, the attack usually commences without evidence of any immediate exciting cause, with very severe abdominal pain without tenderness, but followed rapidly by vomiting and symptoms of constitutional depression. The pain persists usually throughout the whole course of the disease, and if the occlusion of the bowels be complete, is continuous and paroxysmal. The vomiting is even more conspicuous and constant than the pain, and usually becomes stercoraceous before the end of the attack. Tenderness usually comes on about the second or third day, and is of great value in diagnosticating the seat of the lesion, as it is usually local. In very rare instances, there is blood in the vomit, and there have been cases reported in which the pain was not severe. The vomiting is, probably, never absent, and is usually associated with much retching and distress. In regard to the constitutional symptoms, rigors are extremely rare, prostration comes very early and is very severe, the pulse is small and rapidly becomes very frequent, often thready, while the temperature is usually throughout the whole case "sub-normal." There is in most cases intense thirst. The urine is usually diminished in quantity and not rarely suppressed. In most cases the distention of the abdomen is comparatively slight and does not appear at all before the third day, while the abdominal walls remain flaccid until local tenderness becomes marked. In only four cases out of fifty could any tumor be felt, either through the abdominal walls or through the rectum, and in only seven cases was there any localized dullness.

Under the term "*Volvulus*" Mr. Treves treats of obstruction due to twisting or knotting together of the intestines. In the majority of cases of volvulus of the sigmoid flexure there is a history of previous chronic constipation. The symptoms begin with sudden pain in the abdomen, with some slight degree of collapse, and are soon associated with swelling of the abdomen and nausea or even vomiting. Neither the nausea nor the vomiting are as severe as in cases of strangulation by bands. There is said to be no form of intestinal obstruction, except, probably, acute

intussusception, in which excessive tenderness exists earlier than in the present form. The constipation is from the first usually absolute, the general symptoms are those of strangulation by bands, but are usually developed less rapidly, and in some cases the temperature rises after a time. Such rise of temperature is indicative of the coming-on of peritonitis. The urine is sometimes diminished, but rarely suppressed. The most conspicuous feature of this form of volvulus is the enormous distention of the abdomen which appears very early; sometimes the swelling may be at first localized with percussion resonance, but in other cases with percussion dullness. The result is always death unless surgical interference be attempted. Volvulus of the cæcum is rare and the symptoms vary greatly; in the recorded cases the attack has been sometimes preceded by severe diarrhœa, and in other cases by constipation; vomiting and pain are usually very marked and the attack is very prone to be acute in character. In almost all cases death has been brought about, at least in great part, by peritonitis. Volvulus of the small intestine is also infrequent and varies in its symptoms; in its general course it resembles the affection just spoken of; like it, it may be acute, sub-acute or chronic. The pain, which is said to be always the first symptom complained of, is always severe and of a colicky character, and usually first localized about the umbilicus. Vomiting is also more marked, but usually occurs at rather long intervals; the abdomen soon becomes swollen and a mass or tumor is in most cases perceptible. Auscultation during the administration of an enema will, as a rule, demonstrate readily when the colon is involved.

By far the most frequent cause of intestinal obstruction is *intussusception*, forming it is stated about thirty per cent. The symptoms of intussusception are so commonly studied and spoken of that we will not occupy space with their discussion, but refer the reader to the work before us. The book closes with a very careful consideration of the treatment of the various forms of intussusception, and we notice that our author very decidedly favors the practice of opening the abdomen. It seems to us also that in many cases life might have been saved by early employment of surgical interference. Mr. Treves says: "There is no reason why in the future, with a fuller knowledge of the technical details essential to the operation, with a surer acquaintance with the clinical aspects of obstruction, and with the exercise of a sounder judgment in the selection of cases, the procedure of laparotomy should not have a mortality but little higher than that of the operation for the relief of strangulated hernia." In taking leave of the book of Mr. Treves, we desire to reiterate our statement that it seems to us a manual of great value, much superior to the ordinary run of prize-essays as they come under our notice.

DISEASES OF THE URINARY AND MALE SEXUAL ORGANS.—By William T. Belfield, M. D., author of "Relations of Micro-Organisms to Disease" (Cartwright Lectures, 1883). Pathologist to the Cook County Hospital. Surgeon to the Genito-Urinary Department, Central Dispensatory, Chicago. Physician to the Oakwood Retreat, Geneva, Wis. Professor of Microscopy, Chicago College of Dental Surgery.

THE THERAPEUTICS OF THE RESPIRATORY PASSAGES.—By Prosser James, M. D., Lecturer on Materia Medica and Therapeutics at the London Hospital Medical College. Physician to the Hospital for Diseases of the Throat and Chest. Late Physician to the North London Consumption Hospital. Consulting Physician to the Children's Home Infirmary, Victoria Park. Corresponding Member of the Academies of Medicine of Lyons, Madrid, and Barcelona, etc.

A MANUAL OF THE MEDICAL BOTANY OF NORTH AMERICA.—By Lawrence Johnson, A. M., M. D., Lecturer on Medical Botany, Medical Department of the University of the City of New York. Fellow of the New York Academy of Medicine, and of the New York Academy of Sciences. Member of the Committee of Revision of the Pharmacopœia of the United States. Member of the Torry Botanical Club, etc.

New York: William Wood & Company, 56 & 58 Lafayette Place, 1884.
Detroit: J. MacFarlane.

Much has been written on the diseases of the male generative and urinary organs, and the subject is not yet exhausted. Dr. Belfield has lent additional information and interest to the subject, and also has placed the latest information before the readers of the Library. He complains that his time was so limited as to oblige him to leave out a bibliography of the subject, and a minute scrutiny of its literature. To this we do not object, as it alludes more to history than to practical facts.

The great value of the book lies in the author's advice as to the matter of diagnosis, and shows that an inquiry into the phenomena of disease is essential to a proper knowledge of the symptoms, and is the only true basis for rational treatment.

The subject is well handled in all respects

and although we may differ from the author in matter of treatment, we would not hesitate to place the work in our students' hands as the most acceptable work on the diseases of which it treats.

The Therapeutics of the Respiratory Passages, by Prosser James is another valuable addition to the subject on which it treats. It is not written for students but for those who have left the schools and entered upon the responsibilities of practice.

We have carefully examined it, and consequently believe the author is entitled to have his production read before being criticised. We know of no other work whereby the practitioner of medicine can obtain such information as is exhibited in this book.

Not only does he give the reader the physiology of respiration, and a description of the usual pharmaceutical means for its support, but he enters into the discussion of the fundamental principles which underlie all medicinal agencies, viz: *nutrition*. In this he has done well, and may rest his laurels on this part of the book. We are only sorry it can not be given to the general profession who are not subscribers.

A manual of the Medical Botany of North America completes the series for 1884. In his preface the author states "as a teacher of *medical botany* he has been much embarrassed by the want of a text-book suited to the needs of American students—one combining a brief sketch of general botany with the description of medical plants." The author has in the volume before us endeavored to fill this want, and we must say he has well succeeded. In our student life Wood's Botany was our text-book, and with the aid of our professor we eliminated from it our knowledge of such plants as had medicinal properties. Dr. Johnson in this volume eliminates all extraneous matters and gives his medical readers practical information. It is not to be expected that any one man, however intelligent he may be, can know everything, but we must say our author has done much to aid the profession as to the value of the vegetable system in the treatment of diseases. The physiological action of botanical remedial agents has not been entered upon by the author nor particularly their therapeutic indications. To this field the future of this journal will be especially directed. The book is handsomely illustrated, and from personal knowledge we may say that the illustrations are true to nature.

These volumes complete the series of Wood's Library of Standard Medical Authors for 1884, and also the sixth year of their publication. Ever since the completion of the first year has the "Library" increased in value, and the time has now come when our best medical writers may feel complimented in having the privilege of contributing to it. Were we restricted to the sum of fifteen dollars for medical books for the year, we would subscribe at once for the Library of Medical Authors by Wood & Co.

The following is the list of Wood's Library of Standard Medical Authors for 1885:

1. Human Osteology, by Luther Holden. Sixty-four full-page plates and about 80 fine wood engravings.

2. A Handbook of Physiology, by Kirke. Eleventh English edition, by W. M. Baker. Colored plate and about 204 fine wood engravings. Vol. I.

3. A Handbook of Physiology, by Kirke. Eleventh English edition, by W. M. Baker. About 250 fine wood engravings. Vol. II.

4. Disorders of Digestion, by Dr. George B. Fowler.

5. The Wasting Diseases of Infants and Children, by Dr. Eustace Smith.

6. Poisons, their Effects and Detection, by A. W. Blyth. Vol. I.

7. Poisons, their Effects and Detection, by A. W. Blyth. Vol. II.

8. Epilepsy and Other Chronic Convulsive Diseases, by Dr. W. R. Gowers.

9. Climatology and Mineral Springs of the U. S., by Dr. A. N. Bell.

10. Microbic Diseases, by Prof. Germain Sée. Translated by Dr. E. P. Hurd.

11. Clinical Lectures on Diseases of Children, by Dr. Ernest Sansom.

12. Title to be announced hereafter.

ELEMENTS OF PRACTICAL MEDICINE.—By Alfred H. Carter. Third Edition.
New York: D. Appleton & Co. 1885.

Knowing no better manual for students and beginners—suitable for anybody who wants to get the salient points of practical medicine at a glance—we have no hesitation in recommending this book. It is compact—may be carried in a capacious pocket by the beginner in his daily rounds. Contains a "therapeutic index," in which can be found, perhaps with fatal facility, one or more prescriptions suitable to each diseased condition, so that, correct diagnosis being pre-supposed, the futile efforts at every prescription writing will be materially assisted, and the way made easy. Whether a blind reliance on formulæ

may not be injuriously fostered by such works, is not for us to say. Those who use this work to their hurt would, doubtless, use some other —perhaps inferior one—in its absence. The formulæ seem sound—always providing that the previous diagnosis has been correct.

The sections on pathology throughout the book are generally carefully and concisely written. The clinical history, symptoms and diagnosis, expressed in good, clear English. The range of subjects is quite full; the treatment recommended, sound and conservative. In fact, the author seems guided by a desire that every page should contain, as far as possible, undisputed facts—a very valuable consideration in a book of this character and purpose.

A MANUAL OF ORGANIC MATERIA MEDICA. By John M. Maisch, Phar. D.
Philadelphia: Lea Brothers & Co. 1884.

This is the second edition of Professor Maisch's handbook. It is a good, condensed statement of the more important facts of materia medica; illustrated by many pictures, a few of which may be of some value, but not a few of which it would be no crime to worship, as they resemble nothing in the heavens above, or the earth below, or the waters under the earth. To the student of materia medica who desires no knowledge of therapeutics whatever, and wishes to get the smallest amount of information possible to pass his examination with the smallest amount of trouble, this book is of great value. As students of the class spoken of are not uncommon, we expect some day to see a third edition of the Organic Materia Medica.

Correspondence.

*CEREBRO-SPINAL MENINGITIS AGAIN.**

To the Editors of the THERAPEUTIC GAZETTE.

GENTLEMEN—In the GAZETTE for October, 1884, appeared an article on Cerebro-Spinal Meningitis, by Alban S. Payne, M. D., of Markham, Va. This article I read about three-fourths through and being thoroughly out of humor at the illogical reasonings and unscientific deductions, wrote the editor of the GAZETTE remonstrating with him about letting such a lengthy article of so little merit appear in his journal, and perhaps reflected too severely upon the ability of the writer.

My letter was answered editorially in the November number, on page 515, wherein the editor explained why the article was admitted. In the December number, on page 556, Dr. Payne, in a letter referring to my criticism, says he has carefully re-read his paper and endorses every word with one exception, and if I will put my objections in print he will, with pleasure, answer them.

So much for an introduction, and now, Messrs. Editors, as you have published Dr. Payne's challenge, I beg you will give me space for my objections to the article in question.

By way of prelude I will say that I have read every article upon cerebro-spinal meningitis I could find, by reason of having had quite a number of cases of that very fatal disease in my practice before I had been in this city two years, and when I was guarding carefully my growing reputation; and I will say, furthermore, for truth's sake and for the comfort of those in similar circumstances, that I lost my first twelve cases, and I had good, able counsel, and plenty of it, in nearly every case. I have also read two papers on this subject before the medical society in this city. This much I mention that you may see I am more than ordinarily interested in anything concerning the disease in question.

In pointing out my objections to Dr. Payne's article on cerebro-spinal meningitis, I will follow it through from the beginning and quote his words, giving his ideas with comments.

First, Dr. Payne groups almost all the diseases flesh is heir to as proceeding from one cause, viz., cerebro-spinal meningitis. Hysteria, puerperal mania, hypochondriasis, imbecility, nervous prostration, uræmic convulsions, pneumonia, nephritis, dysentery, biliousness, diarrhœa, constipation, and many more, have one common cause, and he finishes by saying that "meningitis may by reflex action invade any organ in the human system, most frequently the stomach and bowels, producing choleroid symptoms, but often the kidneys, lungs, bladder and, I think, also the urethra." From the above reasoning we can imagine every disease known to be reflex of cerebro-spinal meningitis, as he says "it may invade any organ in the human system." Just what is going to invade the organ I don't see—not meningitis, certainly. James C. Wilson, M. D., of Philadelphia, author of "The Continued Fevers," in Wood's Library

* This letter is published in justice to its writer on the grounds he mentions. In future such controversies will be excluded from the columns of the GAZETTE.

of Medical Authors for 1881, says of its causation that nothing yet is known, save it occurs mostly in cold weather; yet Dr. Payne says "it is principally due to sudden vicissitudes of temperature from heat to cold and *vice versa*, to great and sudden climatic alterations, to a want of balance in the electrical conditions of the atmosphere, a distemperature, so to speak; that rheumatism, neuralgia, gout, scrofula, purpura, or syphilis are predisposing causes, and by far the most frequent exciting cause is '*mind worry.*'" He says "sudden and great climatic alterations of temperature produce a distemperature, and this *distemperature* tends to impoverish, to deteriorate the circulating fluid, and any cause that deteriorates the blood is a '*de facto*' cause of spinal irritation." Just what a proper balance of electrical conditions is, or what a "*distemperature*" is, is past my education, and I would ask Dr. Payne what proportion of his 270 cases had rheumatism, neuralgia, gout, scrofula, purpura, and syphilis, and further by what reasoning does he conclude that they act as predisposing causes. In reference to its pathology Dr. Payne says, "Pathologically speaking it is a fever, an irritation of the spinal cord extending from the first dorsal vertebra to the base of the brain. The irritative fever starting in the spinal cervix and base of the brain, you may have an effusion of water on the brain, or by reflex action any organ in the system might be invaded." Here the fever, the irritation of the spinal cord and cerebro-spinal meningitis, are all classed as one and the same thing. I would ask, in what does the spinal irritation consist, and what is going to invade every organ in the body by reflex action, and how does he know in his cases there was any such pathological condition present? In speaking of the pathology of typhoid fever as compared with meningitis Dr. Payne says, "In typhoid fever there is anæmia, anæmia of the upper portion of the spinal cord, of the brain and its meningeal coverings;" where did he get this pathology; did Dr. Payne ever make any autopsies of undoubted typhoid and find such a condition? Dr. Harley, of London, in Reynold's System of Medicine, by Hartshorne, says of the autopsies made wherever he mentions the head: 1st case, notable injection of the meninges: 2nd case, meninges injected: 3rd case, brain healthy but the vessels congested, two ounces of serum in the ventricles: 4th case, meninges slightly injected, and coverings of the cord much injected: 5th case, brain and meninges only moderately injected: 6th case, subarachnoid effusion slight. Wilson says, "There is occasionally increased injection of the pia mater and of the brain itself," and nowhere does any author to my knowledge speak of anæmia. In the 270 cases treated, of which only 3 died, no autopsies were made to prove the diagnosis. No doubt but Dr. Payne has experienced an epidemic of a new and "anomalous" disease, as he says, but if new and "anomalous," he was not justified in calling it cerebro-spinal meningitis without a single post-mortem examination or any other positive evidence. And not content with reporting 270 cases that he had treated in the present epidemic, he takes two columns of the GAZETTE in which to report a case of puerperal mania which occurred in his practice 30 years ago, and now calls that cerebro-spinal meningitis. It would not require a much greater stretch of the imagination for him to recall every case he ever had, and name it meningitis or a reflection of that disease to some organ. To illustrate how irrational are his conclusions, let me refer to the case of H. M. (which he reports on page 442, October number), a previously hearty, strong, colored girl, aged 16, eight months pregnant, whom he found with face, body and thighs immensely swollen, pupils dilated, comatose, breathing stertorous, with strong tetanic convulsions; all symptoms increased, none yielding to treatment, for 4 days, when she died. He says, "She died on the morning of the 9th, the cause in my opinion was want of exercise, and epidemic influence, resulting in uræmic poisoning and from suppression of urine;" and now I ask how could the poor girl exercise when she was comatose with general anasarca, and if she could, how could it have helped her? Was the "epidemic influence" reflected to bladder, uterus, kidneys, brain, or was it a general reflection all over, that produced the general anasarca? Would it not have been as rational to have said that pressure of the gravid uterus upon the renal vessels had, by interfering with the circulation through the kidneys, and so reducing the amount of urea excreted had allowed it to accumulate in the blood, so that now it was acting as a poison, producing coma, and convulsions, and anasarca; and would not good treatment have been to have got rid of that fœtus at the first visit, produced a very free action on the bowels with elaterium, and on the skin with jaborandi and hot packs, and got rid of all the urea possible by the bowels and skin until the kidneys could have taken care of it?

True, she might have died under that treatment, but would it not have been as rational as to rub the nape of the neck with croton oil? Dr. Payne certainly had success in his treatment of the 270 cases, to lose only three; I truly doubt if the treatment in general could have been improved upon, but he has failed to convince me at least that he had one solitary case of cerebro-spinal meningitis in the whole lot; most certainly not one in the 200 cases that he cured in 24 hours each. The cases where the croton oil was rubbed on the front of the chest got along just as well as those where application was to the nucha: no autopsies were made, without which such an article should not have appeared in print, for it is altogether too much guess-work to fill the columns of a medical journal, or to occupy the valuable time of the readers. Dr. Payne's admission in his last letter, p. 556 (Dec. number), that three years ago he supposed meningitis was only sporadic in form, and that hyperæmia of the meninges of the spinal cord and brain could be epidemic, going through whole families, etc., etc., indicates unfamiliarity with medical literature, upon which I refrain from comment. In this last letter four more cases are reported, in which he says there was blood and mucus discharged from the bowels. He says: "In these cases the irritation was simply carried to the rectum by reflex action, instead of to the stomach and small intestines." With such convenient pathology at hand, we have no trouble to account for all our cases; nothing is obscure; all uncertainty is done away with, and the practice of medicine made clear as day. To Dr. Payne's statement, "I am not unmindful, Mr. Editor, of the danger of promulgating ideas in advance of one's day and generation," I would simply say that when a man leaves the well-beaten paths of the medical profession and strikes out on his "own track" to get way in advance and promulgate ideas, there is danger that he will get hopelessly lost off to one side, and be worse off than if he was behind, for then he could "catch up." When a man promulgates ideas that were never before heard of, and which we cannot harmonize with our best judgement, and when these ideas are simply theories founded upon guess-work, it is by no manner of means absolutely certain that they are in *advance* of one's day and generation.

C. M. Skinner, M. D.

Minneapolis, Minn.

URINARY INCONTINENCE IN CHILDREN.

To the Editors of the Therapeutic Gazette.

Gentlemen—In reply to a question of Dr. T. G. Comstock, in his paper on Urinary Incontinence in Children, if any of your readers ever had to adjust a truss for hernia in a jewish child, I can answer yes. In three cases I have applied a truss. I am not positive in regard to the cause of the rupture, but am certain that it was not caused by an elongated prepuce, since they were all circumcised when only a week old, and the skin was well drawn back over the glans penis. Also no later than 16th Aug., 1884, Mr. C. called on me at my office to consult me in regard to his two sons, Harry and Benny, aged respectively 11 and 9 years, about wetting their clothing and bed; they are jewish children and were circumcised, according to the jewish religion, when a week old. Their father tells me they had been wetting their clothing, etc., for several years and had been under the care of a practitioner in this city for a long time without much benefit. I inquired into their history and habits, and I cautioned the father not to punish them and to be more guarded about their diet, to have them abstain from all stimulating food and liquids towards evening and bed time; I put them on bromide of potassium and fl. ext. bellad. three times a day: in one week Harry, aged 11 years, reported that he hadn't wet the bed since he began taking the medicine. Benny was better but occasionally wet the bed; I continued above treatment and also ordered for him 5 gr. benzoic acid three times daily; he began to improve and at this writing both are cured. Yours, etc.,

R. A. Gumberts, M. D.

Rochester, N. Y., Jan. 5, 1885.

ETHER AS AN EXPECTORANT.

To the Editors of the Therapeutic Gazette:

No remedy I have ever used is equal to ether, as an expectorant.

I would not advise it in an acute bronchitis, but in the sub-acute, or chronic form I know of no better remedy. I have prescribed it in five- and ten-minim doses, on a little sugar, every three or four hours, or it can be taken by inhalation as follows: The cork of a bottle, half-filled with ether, is perforated by two glass tubes, neither being immersed in the ether. A few inspirations through the tubes every hour or two in sufficient. As the remedy is also a diuretic and diaphoretic, its utility is thereby increased.

I have frequently used ether for this disease, and always with benefit to the patient.

WM. S. KEMPER, M. D.
KEWAUNEE, Wis.

Notes and Queries.

PRECAUTIONS AGAINST CHOLERA.

The council of the Parkes Museum, London, have inaugurated a series of popular lectures dealing with national, local and personal precautions against cholera, the first of the series being delivered on December 12 by Mr. Ernest Hart (reported in the *British Med. Journal* Dec. 13, 1884) on national measures of preventing the spread of cholera.

One of the most striking points brought out in his address was that European quarantine by sea, and land quarantine in any case, had invariably proved not only useless in preventing the extension of disease and loss of life, but cruel and mischievous, and had greatly added to the misery and suffering due to outbreaks of cholera. He condemned the attempts at quarantine practiced in France, Italy, and Spain, as being contrary to the experience and the knowledge of facts, as well as to science. Quarantine, he maintained, had never kept cholera out of any European country, or limited it to any European district. He proceeded to describe in detail the system of medical inspection at ports and termini, by which alone, he said, reasonable efforts might be made to prevent or limit the importation of cholera. He pointed out, however, some desirable improvements in the latest code of regulations. Governments had practiced innumerable follies and insanities of quarantine, totally contrary to the rules of science, during the last epidemic. Rome, with its pure supply of water and relatively efficient drainage, had remained free from cholera, while Naples, with its ground-soil impregnated with sewage, and its filthy habitations and polluted water-supply, had suffered most lamentable losses. In Genoa, a severe outbreak was immediately traced to the pollution by washing the clothing of cholera refugees in one of the sources of water supply. It was sharply stopped by at once cutting off this supply. He had excellent reasons for believing that the recent outbreak in Paris was due to the temporary supply of a highly-polluted water to particular districts of the city. The prevalence of typhoid fever was, he once more declared, the true index of the liability to Asiatic cholera. Wherever typhoid prevailed, there the local conditions existed which would favor the propagation of cholera; and, until typhoid fever disappeared from among us, we could not consider ourselves free from the risk of the importation and the propagation of this epidemic disease. The lessons he desired to urge were:—1. That quarantine was useless, because impossible in any complete form; 2. That medical inspection of ports was essential, and with this should go means of isolation, compulsory notification of infectious disease, and the active exertions of all local authorities to free the districts under their control from the known conditions which render them liable to the extension of epidemic diseases when imported; 3. That disinfection was of most doubtful value under the known conditions of choleraic disease; 4. That cleanliness, in its fullest and widest sense, was the prime element of safety; 5. That the prevalence of typhoid fever was the index of the liability to cholera; the diseases were twins in origin and propagation. The president, Director-General Crawford, in moving a vote of thanks to the lecturer, said that, from his Indian experience, he entirely endorsed his remarks as to the uselessness of quarantine for the prevention of the spread of cholera. The vote was carried by acclamation. Sir Lyon Playfair, in moving a similar vote to the chairman, also expressed concurrence in all his conclusions. Sulphur fumigations were as ancient as Homer, who described them. Purity of the water-supply and efficient removal of refuse were the best safeguards.

A CASE OF POISONING BY CARBOLIC ACID.

At the meeting of the Boston Society for Medical Improvement, held Dec. 22, 1882, DR. W. F. DRAPER exhibited the stomach of a young woman who, with suicidal intent, had swallowed an ounce of undiluted carbolic acid. It was impossible to obtain accurate information concerning the symptoms or their duration, as the girl was alone when she took the dose, and attention was first called to her condition by her moans. She was found unconscious, cold, sweating freely, frothing at the mouth. Her lips were blanched by the local action of the acid. There was no vomiting. The poison was taken upon an empty stomach.

At an autopsy, eight-and-a-half hours after the death, a remarkable lifelike flush of the cheeks and brightness of the corneæ were ob-

served. The mucous membrane of the mouth and lips was bleached. On section of the body the odor of carbolic acid, though decided in its manifestation, was not extraordinary. There was nothing remarkable about the heart, the blood, or the lungs. The œsophagus was uniformly whitened throughout its extent. The stomach was contracted in all its diameters. Externally, the course of its vessels was marked by dull red lines a quarter of an inch wide. The entire mucous membrane presented the caustic effects of the acid in full degree. It was of a dull white color, with here and there a pinkish tinge in the depressions of the rugæ, which were remarkably developed. The entire inner aspect of the organ had an appearance as if it had been suspended a moment in a thin mixture of plaster of Paris which, hardening, had coated the mucous lining of the stomach with a dense white deposit, hard and rough to the touch and easily cracked.

For about six inches below the pylorus, the mucous coat of the duodenum showed limited areas of the whitened and thickened appearance seen in the stomach, but less in extent and degree; it was chiefly manifested upon the summits of the mucous folds, the intervening depressions having escaped the caustic action. The caustic and irritant effects diminished rapidly as one proceeded downward, and the lower part of the duodenum and upper part of the jejunum showed only a moderate redness of the mucous membrane.

The liver, spleen, and kidneys were deeply reddened and were injected. The bladder contained four ounces of urine of normal appearance.

Dr. John Homans stated that he had known death to occur inside of ten minutes without foaming at the mouth, in a person who had taken a teaspoonful of clear liquefied carbolic acid.—*Boston Med. and Surg. Journ.*, Jan. 1, 1885.

LIQUOR LAWS OF THE UNITED STATES.

The following statement of the methods adopted in the several States and Territories of the Union in dealing with the liquor question, which we take from *The Philadelphia Press*, will be of interest to many of our readers. The report is compiled from answers received from the Secretaries of State:

Iron-clad Prohibition States with constitutional provision against the manufacture and sale of intoxicating liquors, Maine, Vermont, Iowa and Kansas—4.

Prohibition State but no constitutional provision: New Hampshire—1.

States in which Prohibition has been tried, but either from lack of success or change in public sentiment, changed to milder methods: Massachusetts, Connecticut, Indiana, Michigan and Wisconsin—5.

States and Territories having general and stringent license or "local option" laws: Rhode Island, New York, Pennsylvania, West Virginia, South Carolina, Arkansas, Illinois, Minnesota, Nebraska, Dakota, and Washington—11.

States allowing "local option" by special act of the Legislature: North Carolina, Georgia, Alabama, and Mississippi—4.

States and Territories having no general laws, and where no special attention has been given the subject: New Jersey, Maryland, Virginia, Louisiana, Kentucky, Ohio, Missouri, Nevada, Colorado, Arizona, Montana, New Mexico, Wyoming and Utah—14.

States from which we have been unable to obtain replies: Florida, Texas, Tennessee, California, Oregon, Idaho, and Utah—7. Total, 46.

EUONYMIN.

Romm has investigated the physiological action of euonymin, a crystalline glucoside prepared from the bark of euonymus atropurpureus. In cats the drug causes reduction of the frequency of the pulse and increase of cardiac energy and blood-pressure; in other words, the characteristic action of digitalis. It is peculiarly adapted for hypodermic injections, as it causes neither swelling nor irritation at the point of application. Hence, it might advantageously displace preparations of digitalis when administration by the mouth is contra-indicated, and an instantaneous powerful action is desired. A notable and not yet fully-investigated property of euonymin is to cause a very protracted influence on the heart when given internally in one large dose. Thus the ingestion of ⅛ grain, and two days after of ¼ grain, in a cat produced a reduction of the pulse from 140 to 96 beats per minute, lasting 19 days after the exhibition of the drug.—*St. Petersb. Klin. Woch.*, 48, 1884.

IRRITATION OF THE SKIN FOLLOWING THE APPLICATION OF VASELINE AS A SURGICAL DRESSING.

Mr. Mayo Robinson states in the *Lancet* for Nov. 8, 1884, that on several occasions within the last two years he has noticed, both

in private and hospital practice, that severe eczematous inflammation of the skin has been set up by the application of vaseline as an ointment, which, however, subsided on applying some other simple dressing. It is possible that in the cases which he reports, the irritation may have been due to some impurity in the vaseline, since, if pure, it should be a perfectly bland preparation. But it may be that some skins present the same idiosyncrasy to preparations of vaseline as others do to any application of tar, and this seems the more likely since Mr. Robinson further states that the same specimen of vaseline was used in many other cases without producing irritation, those in which severe dermatitis was caused being exceptional.

PATHOLOGY AND THERAPEUTICS OF CHOLERA.

PROF. MARAGLIANO, chief of the cholera hospital in Genoa, has published some valuable results obtained during the recent epidemic in that city. The cyanosis and subsequent asphyxia in cases of cholera led Maragliano to investigate whether either the red blood-corpuscles did not find the necessary supply of oxygen, or, this being the case, were unable to fix the oxygen. Assisted by an especially-contrived apparatus of measurement, he found the respiratory capacity of the red blood-corpuscles intact; hence, he justly concludes that the asphyctic symptoms were due to lessened energy of the circulation following the thickening of the blood and modified vaso-motor innervation. He noted an increase in the tension of the blood-current after the enemata and hypodermic injections, as practiced by Cantani, and previously referred to in detail on page 127. To heighten the effect of this method he advises a mustard bath of 104° F. immediately before or after the employment of Cantani's method of simultaneous rectal injections of tannin and subcutaneous injection of saline solution, and to inject the fluid in at least two different places. He does not claim, however, that the injection is all that is needed in cholera, but the patient must also be guarded against exhaustion and collapse by hypodermic injections of ether, quinine and strychnine.—*Zeit. f. Therapie*, 24, 1884.

MULLEIN IN PHTHISIS AND ASTHMA.

According to DR. GEORGE F. HAWLEY (*Western Medical Reporter*, Jan., 1884), mullein has recently been used quite extensively in the St. Vincent Hospital, Dublin, in the treatment of phthisis and certain forms of asthma. It is given in the following manner: one ounce of the dried leaves is added to a pint of milk which is placed over the fire till it reaches the boiling point, when it is strained through a coarse cloth. This is to be taken during the day, one-half in the morning and the rest at night. In cases of diarrhœa it seems to check the discharge. The leaf may also be smoked, and the smoke inhaled in cases of asthma, in the form of a cigarette, a little tobacco being added if unpleasant to the taste. Its use is said to be followed by disappearance of dyspnœa.

PARALDEHYDE.

This drug, which, though of recent discovery, has secured a place among our most valuable hypnotics, has been experimented upon at the Jena Hospital in cases of stenocardia and chorea, without any success. Sleep could only be obtained in one half of the cases in which it was administered and rarely lasted more than three hours. On the stenocardia affection and chorea themselves the drug exerted positively no influence. Vomiting, immediately after ingestion of the drug, occurred several times.—*Deutsche Med. Zeit.*, Dec. 24, 1884.

WHO OWNS A PRESCRIPTION?

The question, who owns a prescription after it has once been filled—the physician, the patient, or the apothecary, is reported to have come up in a Connecticut liquor case, wherein an order for a half a pint of gin has been duplicated many times, and the excise officers wish to punish somebody.—*Ex.*

ARBUTIN.

Three cases of vesical catarrh, one of gonorrhœa and one of purulent cystitis were treated in the Jena hospital with arbutin. In one of the catarrhal cases the affection disappeared rapidly under its influence, whilst in two others the drug not only showed no curative power, but actually made things worse, causing increased quantities of pus and membranous shreds to appear in the urine. Rossbach, though, reports that he has succeeded in arresting nephritic hæmorrhages in a few hours by arbutin.—*Deutsche Med. Zeit.* Dec. 24, 1884.